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Biological
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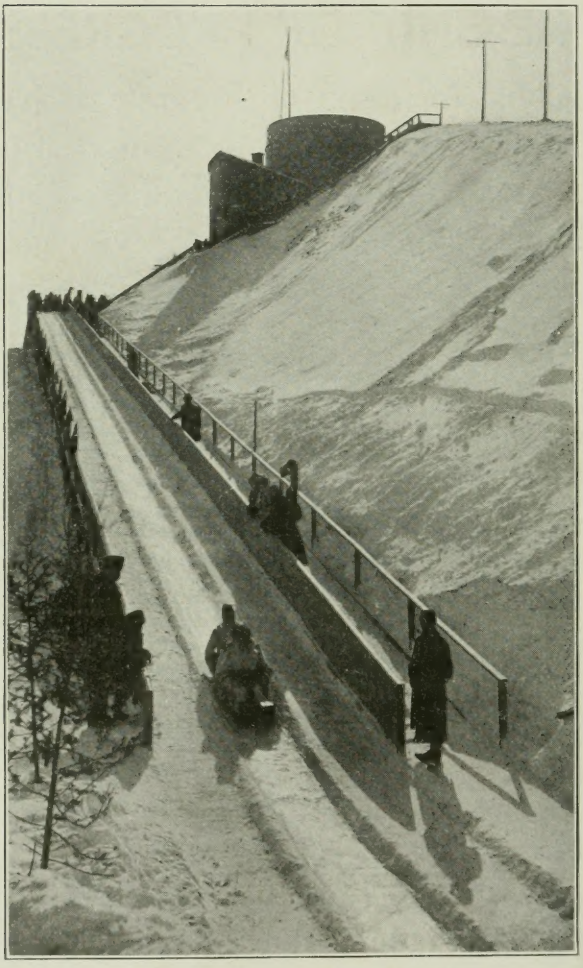
Serials

STORAGE

THE SHIP OF PROGRESS

Sailing the Ship of Progress is very much like sailing any other ship. Much depends upon the wind and other weather conditions, of which many variegated kinds have to be dealt with. Not very remotely we had a siege of high winds, but very fitful and uncertain. More recently we had a steady head wind, against which it was almost impossible to advance. Indeed, if it is true that human nature is distinctly conservative, then, of course, a head wind is the prevailing wind. Just now, however, we have an unusually fair wind, under which more progress is made with less fuss than under any other conditions. Nevertheless, we must never relax the vigilance of our weather eye. A storm may come up at any time, and occasionally storms arise where all skill fails, and the best sailor is the one that can cling longest to the rigging.

STORAGE



SLIDE FROM CITADEL ON TERRACE, QUEBEC CITY
Where the 1916 Congress of the Canadian Public Health Association will be held.

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RURAL SANITATION

By A. C. JOST, M.H.O., Guysboro, N.S.

Conference of Medical Health Officers of Nova Scotia, 1915

AS between life in a rural or an urban community, the ordinarily accepted idea is, that while the dweller in a rural community is debarred from many of the privileges and opportunities enjoyed by his urban neighbor, the balance is held fairly even on account of the more healthful conditions under which the farm or country dweller lives. So statistics would appear to prove, as witness the last published returns for this province. There a death rate of 13.7 for the rural districts compares very favorably with that, 17.4, of the urban communities, so that the country holds the palm so far as their relative healthfulness is concerned.

But does a low death rate signify on a whole better sanitary conditions? Do not other factors enter largely into the question? That this can be maintained is without doubt. It is idle to attempt to prove that the modern city, equipped with every facility for the conservation of life which the ablest human brains can devise, and empowered by means of the adequate machinery to handle any condition which may arise which threatens to jeopardize the public health, is in a worse sanitary condition than the rural hamlet where each man's wish is a law unto himself, and where the most rudimentary principles of sanitation are known but to be ignored. The successful maintenance of this assertion makes advisable the relaxation of all health ordinances in every city of our land.

The average health of a community, as evidenced by the death rate, is the resultant of many factors, of which the general sanitary conditions is only one. The resisting powers of the individual, the effects of excesses bodily, mentally or drug, the prevalence and the increased danger of the spread of epidemics in the more thickly settled communities, occupational diseases and fatalities, the relative ignorance and poverty of the individuals, all these must be considered. The rural inhabitant has relatively the better position respecting more of these factors than has his urban neighbor, and to this fact is due the relatively low death rate. The advantages of healthful occupation, abundance of wholesome food, a wholesome outdoor life, temperance, these are some of the things to which credit must largely be given, are some of the factors which tend to offset deleterious influences, are credit items on the ledger which preponderate in the sum total of a favorable balance. Add to these advantages and it is possible to conceive that the rural death rate would approach that irreducible minimum below which it is impossible for no death rate to go.

For the conclusion must be arrived at that the ordinary conditions which prevail in the average country community present as many infractions of sanitary precautions as it is possible to imagine, and would cause an urban Health Officer to hold up his hands in holy horror. This being the case, is it wonderful that typhoid fever and some other infectious conditions are more prevalent in country than in town districts, or that tuberculosis has there the larger death rate?

In what must necessarily be a very sketchy consideration of the subject for your attention to-day I shall first take up the farm, the unit, a collection of the number of which constitutes the rural, as distinguished from the urban community.

Have not you all seen a picture such as this which I shall attempt to describe. On a slope above and not far from the country road is a farm house. Directly above it on the hill at a distance of fifty yards or more is the barn, possibly much larger than the house, and flanked on each side by piles of manure, lying open to the wind and weather. A well marked path or road leads from the house to the barn. On one side of this road are clustered the smaller outbuildings, including the pigpen and the privy, while on the other side is the farm garden, the most heavily manured spot on the whole extent of the farm. Nearer to the house is the well, surrounded by troughs or tubs from which the farm stock is watered.

On examining a little more closely, one sees well marked signs of drainage from the barn above the path or road to or past the well. The privy is the ordinary farm privy, open to every wind that blows and also to every fly that blows and flies, a building constructed over a shallow pit, at a spot within a short distance of the dwelling, but where it is evident that ease of access has been considered more than the sanitary one of drainage. In respect to the well, it is a dug well, lined with loose masonry, built about six inches above the level of the ground and surmounted by a platform of boards on which is built the curb. Looking closely we see that water spilt on the curb, and there contaminated can easily flow back through the platform, or if it flows off the platform, falls on the loosely filled masonry and thence back to the well. Hens and geese wander around the yard, their excrement being frequently in evidence, and possibly while we are watching, the farm dog meditatively cocks one hind leg up against the well curb. It is easy to see that all the wash water and kitchen slops are thrown from the small stoup in front of the kitchen door, in the general direction of the dooryard, and from the same platform are scattered the scraps of food from the table, given to the poultry.

How many of you have not seen pictures exactly as I have here described? And how many sanitary precautions are there which have not here been neglected?

Perhaps the subject can be best considered by taking up each of the components of the picture, and stating a few elemental facts concerning the sanitation of each.

The Farm Well.

1. The water used for household purposes should not be derived from the same source as that which supplies the barn.

2. Farm stock should not be allowed near the source of the water supply of the house.

3. The well should be so situated as regards surface lines and contours as to be perfectly safe from all danger of contamination by surface water, especially that which is likely to be contaminated with the drainage from the barn or other outbuildings. This applies not only to the surface water resulting from the ordinary rainfall, but as well to the increased amount of surface water resulting from heavy freshets or spring thaws.

4. The upper portion of the masonry should be sufficiently elevated above the ground.

5. The platform and curb should be so built as to conduct away from the well all water spilt on it, so that it is impossible for material tracked on the platform to be washed back into the well.

6. The well should not be placed near any heavily manured piece of ground.

7. It should be protected from accidental contamination by any animals or poultry on the farm.

8. It should not be used as a cooler for meats or other food products. The common custom of hanging meats, creamers full of milk, etc., in the well is very reprehensible. Blood or milk is apt to drop thence, and decomposing, render the water more or less putrid.

9. It should be so constructed that baling out for the purpose of cleansing it is an easy matter. In spite of all precautions it will likely be found that the well since the last cleansing has been a death trap for many forms of creeping or animal life.

The form of well which best meets all these indications for safety is the driven or piped well. Otherwise, a well constructed of concrete, which allows filling only from the bottom, is the best, but where water

can be obtained by a driven well, the absolute purity of the water thus obtained, the impossibility of contamination, its cheapness of construction, all these are things strongly in favor of its adoption. It is regrettable that so few wells of this kind are in use in Nova Scotia. In certain portions of the province their use is prevented by various geological conditions, but there is little doubt but that, their value becoming known, they will largely replace the present unsatisfactory makeshift.

The Privy.

Words fail, the English language is inadequate, to describe the average country privy. Suffice it to say that often in their construction, neither the most elemental rules of sanitation or any ideas of personal comfort are taken into consideration.

The selection of its location in reference to ground lines, arrangements for its ventilation and for screening it from flies, these are of the greatest importance.

Opinions vary greatly regarding the best form of closet to be used. The construction of a water closet in the original meaning of the word is usually impossible. A closet built over a concrete pit, and draining into a well located and well constructed cess-pool, an earth or dry closet, the closet constructed on the pail system in which the excreta are caught in various disinfecting solutions, it is easy to select one from the many types which can suit every indication, not only those of safety but those of comfort and convenience as well. Whatever system is selected, care in its maintenance is necessary, for otherwise, what is potentially or inherently the most sanitary system wholly fails in its purpose.

The Barn.

Regarding this, the following may be regarded as some elemental rules:

1. Manure should be removed frequently from the stables, and if possible, carried directly to the fields. The ordinary method, that of allowing manure to remain exposed to the wind and weather for months, during which time its most valuable constituents have been drained away, is an economic waste as well as very possibly a sanitary sin.

2. Abundance of good water should be provided for the stock.

3. Ventilation should be provided for, and the animals should not be too much cramped. Five hundred cubic feet of air space should be allowed per animal. Ventilation intake should be calculated on a basis of one square foot for each ten head of cattle, the outlet being double this size.

4. Horses and cattle should not be kept in the same stable, the stable should not be made the repository for harness and farm tools or utensils, nor, as is often the case, should poultry be allowed to wander in and out at will or to roost on the mangers.

5. The question of light is an important one. Three feet of window glass should be allowed per animal. Upright are preferable to horizontal windows.

6. The floor of the stable should be of concrete.

7. The ceiling of the stable should be tight, not as is often seen, composed of rough poles which allow dust and dirt to fall through from the mow above. The wall should be sheathed, kept free from dust and cobwebs, and white washed twice a year.

8. The cattle should be tuberculin tested, and the health of the herd well looked after. Approximately 10 per cent. of the cases of tuberculosis are supposed to be caused by bacilli of the bovine type. I have not been able to get figures giving the relative percentage in Nova Scotia, but if Nova Scotian figures agree with those from other sources, it should be comparatively easy to stop altogether the outbreak of cases of the bovine type.

The House.

Assuming that directions have been followed respecting the farm buildings, the matter of sanitation of the home is not a difficult one.

1. Due provision should be made for the disposal of waste water and sewage.

2. The removal and destruction of waste food and garbage of all kinds should be provided for.

3. The house should be properly ventilated.

4. Proper arrangements should be made for the screening of doors and windows to prevent the ingress or egress of flies.

5. Measures should be taken towards the drainage of places likely to furnish breeding places for flies.

May we not confidently expect that under the conditions such as these here advised, the results as evidenced by the relative healthfulness of the residents, would compare very favorably with those under the conditions described in the picture previously given in this paper.

So much for the sanitation of the farm, regarded as a home. We must not forget however, that the ordinary farm has another function, and its relation to the collection and preparation of food products, especially milk and its derivatives, must not be overlooked.

1. The dairy should be light and well ventilated. The importance of protecting the milk from contamination with dust and from the absorption of strong odors should not be forgotten.

2. The dairy should be used for the storing of milk alone, and should be kept scrupulously clean.

3. The milk pail, when full should be taken to the dairy and there emptied, the milk being strained through gauze, which has been boiled for the purpose of sterilization.

4. The milk should then be allowed to cool, and the more rapidly cooling takes place the better. A temperature of 50 degrees should be maintained if possible.

5. The use of a milk pail partly covered over will prevent the access of quite a little extraneous matter. This is important to prevent, for since a large portion of this matter is soluble, straining will not remove it after the milk has once become contaminated.

6. Milk pails and all utensils made use of in the dairy should be used for no other purpose. The most scrupulous care should be exercised in keeping them clean and in sterilizing them after use.

7. The milker should be free from any contagious disease, should wear a linen or cotton duster and cap, and the hands should be thoroughly washed before milking.

8. The udder and teats of the cow should be wiped off before milking is commenced. Long hairs near the udder should be kept clipped off. The cows should be kept clean, and any bedding used should be changed sufficiently often.

The raw product having been secured under conditions such as here described, scrupulous care and cleanliness should be used during every stage of the process, from its collection in the barn to the consumer. Whether, as is increasingly the case in districts where the milk is not destined for the city market, a cheese or butter factory is the recipient after the needs of the farm have been satisfied, or whether the home process of buttermaking uses up the surplus, the exercise of this same care and cleanliness should be a constant factor, and it can be confidently maintained that the extra money values which the finished product can then demand will well justify the extra labor involved.

Reference must be made to the custom of many farmers slaughtering their own stock. As a rule, this is not objectionable, for the meat so procured is often destined for the farmer's own use, the surplus alone above that required in the home being marketed. The stock thus killed is usually the best of the herds, as it is intended for use in the home, and though the facilities of the ordinary farm are such that a sanitary limit would soon be reached if much slaughtering were done, much objection cannot be taken to the ordinary amount of fall slaughtering on an ordinary farm.

We have thus considered the unit of the system which goes to make up a rural as opposed to an urban community. With respect to the appendages of a number of such units, namely, the schools and churches, the application of the same principles must result in conditions which will prove satisfactory. Taking up first the schools, the measures to be taken must be divided into those dealing with the school premises and those dealing with the pupil.

The School.

1. The school premises must be kept in hygienic condition. The school should be well located as regards drainage, a satisfactory playground should be arranged for, and suitable privies provided.

2. Heating and ventilation should be properly looked after.

3. The lighting of the school is a very important feature, as well as the number and placing of the blackboards.

4. The care exercised in keeping the school at a proper standard of cleanliness should be unremitting.

5. The drinking water used by the scholars should be satisfactory.

The Pupil.

The advantages gained by medical inspection in the schools are so many and obvious that argument in favor of it as a routine procedure is not required. The especial reasons why such inspection is called for may be thus summed up.

1. For the detection of contagious diseases, including tuberculosis.

2. For the detection of diseases other than contagious diseases.

3. For the detection of physical defects, defective eyesight and hearing, adenoids and enlarged tonsils, decayed teeth, etc., and the purpose of inducing parents to have these defects remedied.

4. For the detection of mental defects, determining the mental status of backward children, with a view to the removal of the cause, if possible, or of regarding them, and arranging courses of study most suitable for the individual case.

5. The educational aspect of such examinations must not be lost sight of. The importance of the inculcation of right habits of living in all aspects in the child is the first step in the teaching of the nation.

Much the same principles are to be applied to the sanitation of the country church as have been considered in the case of schools in a like community. Ventilation, drainage and lighting must be looked after. If, as is often the case, the church has on its grounds a stable for the accommodation of the horses driven from some little distance by the members of its congregation, such a stable should be well located, and arrangements made for its drainage, and for the mitigation of the number of flies which the exposed manure piles are apt to foster.

Sanitation of the Village.

In that indeterminate time, when a village, to parody the poet's words, "stands with reluctant feet where the town and country meet," the problems which are presented are in a class by themselves. The ability to handle questions arising from the infraction of sanitary regulations is not so great as when, following incorporation, the town finds at its disposal greater powers and the advantages of a better regulated machinery. In the village, as a rule, water and sewage systems are non-existent, and on the other hand, the advantage of space, which the farm affords, thereby permitting a large latitude of choice in respect to the relative positions of farm house and outbuildings, is absent. Under circumstances such as these, the problems which confront the average householder, how to utilize an ordinary village lot so as best to select sites for house and barn, with provisions for a well and suitable arrangements for the disposal of sewage and waste water is often not only difficult but at times impossible.

Only too often in communities such as this do we find individuals whose tendencies are such as to permit on their premises the location of nuisances and dangers to the health, not only of themselves and their own families, but also of the families of all in the vicinity, and in many cases such individuals are allowed to impose their will on their neighbors by reason of ignorance of the risk such courses of action entail, ignorance of the methods to be used to secure their abatement, and either apathy or a neighborly though misdirected disposition to put up with such conditions rather than rupture friendly or neighborly relations.

I have in mind a community in my own municipality. Along almost the entire waterfront the land is owned by a corporation. Above this on the steep hill side, are rows of lots, several tiers in depth, separated by streets which parallel the waterfront. The owners of properties facing the lands owned by the corporation are prevented from draining their houses through or on the corporation-owned lands. The rear of their own lots, separated by but a narrow street from their immediate neighbors in the next higher tier, are liable to contamination, and not from these neighbors alone, but from all the properties above them on the hillside.

The accumulated refuse of all is washed down the hill during the progress of a rainstorm or a spring freshet, overflowing the property on the waterfront, after endangering every intermediate holding in its passage.

It has been stated that it is the experience of the chemists at Ottawa engaged in the examination of farm waters from different portions of Canada, that under any circumstances about seventy per cent of farm well waters are unfit for use, and more, that they had yet to find a farm well which had been over ten years in use which furnished a pure first class drinking water. If this be the case with farm wells, what must be the condition of the water derived from wells in a community such as this, where the houses have been huddled together on the hillside, and where settlement took place some score of years ago? And how are we to remedy such a condition of affairs?

It has often appeared to me that our laws are unsatisfactory in their attempts to deal with a situation such as that I have described. Under circumstances such as these, if mutual arrangements can not be made among a number or all of the residents, whereby plans for the installation of a sewerage system can be arranged for, individual householders are very seriously discommoded. Very rightly, the law does not allow one person to drain his property on to that of another. Connection with the street drain is also not allowed. It does not appear right that it can prevent the drainage of one property through another, if that is the only feasible way, except at the risk of an action for damages for trespass or for a consideration which may very easily be made extortionate.

Situations such as these are more easily handled in incorporated towns, which have the machinery whereby the location of building sites can be overseen, localities laid off within the boundaries of which it is impossible to build barns or keeps cows and horses, with the resultant manure piles, and where it is possible to arrange for a sewerage system. The municipal machinery which it is necessary for us to invoke for the removal or amelioration of such conditions is much less adequate and much more cumbersome, and the result is, that each person becomes a law unto himself, and the rights or needs of a neighbor are apt to receive very scanty consideration.

There is no doubt but that the question of pure water supply is here met but in one way, by the establishment of driven or artesian wells, provided a union of forces cannot be brought about for the purpose of the maintenance of a water system from a source beyond the possibility of contamination. Provided the land conditions are such as to allow of their use, there is here every argument in their favor. Their absolute safety from the possibility of all contamination by surface water or drainage, the small space necessary for the manipulations of boring, as well as that required for their use, these are the most important points in their favor.

With respect to the privies allowable in such cramped conditions, the forms previously referred to may be used with safety here. Recently there have been placed on the market other forms of closets which are suitable for use in the house, in which excreta are burned in crematory closets, or, by the use of disinfectant chemicals, their objectionable features are destroyed. These appliances, connected for ventilation to the house flue, can be used with perfect safety, and with the total avoidance of objectionable features, and are to be strongly recommended, possibly the latter form especially, where conditions are such as to make connection with a sewerage system impossible.

The remarks previously made in reference to the sanitation of schoolhouses, churches and dairies of a farming community apply to the village institutions of a similar nature. In these latter, there are, however, usually slaughter houses where cattle are killed for local consumption or for the purpose of supplying outside markets, and the conditions under which these are managed is very different from those on the average farm. In cases where slaughtering is done more frequently, and where this business assumes greater importance, our efforts should be directed towards securing the following requisites.

1. Ante mortem as well as post mortem examination should be made of the animals to be slaughtered.

2. The locality should be well chosen, in the vicinity of an abundance of good water.

3. Offal, the proportion of which it must be remembered is larger under rural conditions, on account of the difficulty of disposing of portions of the carcasses for which no sale can then be obtained, must be destroyed or made away with in some sanitary way.

4. Knives, saws and axes should be kept clean.

5. Carcasses should be hung up at a distance from any decomposing material.

6. Meat should be cooled, and the sale of it not allowed for some time after slaughter.

7. The greatest care should be taken to prevent the presence of flies in the vicinity of the slaughter house.

8. Ventilation and screening of the house should be provided for.

9. Persons working around the slaughter house should be free from any infectious disease.

In our consideration of fishing villages a whole new series of conditions must be taken into consideration. In the first place, proximity to a suitable fishing beach usually has determined the location, irrespective altogether of the presence of the suitability from other points of view. We are probably all acquainted with the aspects that some such villages present. The houses are often huddled together without any attempt at an orderly arrangement on a plot of ground where arrangements for drainage or for a suitable water supply are utterly impossible. This of itself is sufficiently serious, but it may be made much worse by the stench arising from the piles of offal flung overboard from the fishing stages, and allowed to be strewn by the tide along the waterfront.

In short, any person acquainted with the sanitary condition of many of our fishing villages, and aware of the conditions under which much of our fish foods are prepared for the market, must appreciate that there is vast room for improvement.

Any presentation of the matter under consideration is incomplete unless there is borne in mind the possibility and the means by which improvement may take place. What constructive criticism have we to offer? What powers can we invoke, what forces have we at our disposal the exercise of which will result in the amelioration of unsatisfactory conditions?

A well planned educational campaign will best satisfy our present needs and offers the best prospects of results along the lines indicated.

Where, you may ask, shall our efforts at education be directed? In reply, I ask, where shall they not be directed? Are those in authority, the governments of the day, sufficiently cognizant of the importance of the health of the governed? What better results than those we have attained can be secured by the exercise of the means allowed us?

On the other hand, of what use are laws under circumstances where public opinion does not permit or secure their enforcement?

In short, our educative campaign ought to include all classes. When we have a system of health laws sufficiently flexible to meet the demands of all classes and conditions of living, and when we have an educated public opinion which recognizes the necessity of, and gives its assent to, the enforcement of these laws, present-day conditions shall be greatly improved.

Along what lines must our educative campaign be directed? I shall endeavor to enumerate these shortly.

1. The recognition of what are sanitary as opposed to unsanitary conditions. Too often disease is looked on as a visitation of Providence, and as such accepted, when even the most careless observation will shortly convince us that neglect of simple sanitary conditions is the determining factor. The ordinary individual is apt to be satisfied with the conditions under which he has spent the largest part of his life, and fails to see why a change is necessary. One of the first essentials is that he be taught to realize that many of the surroundings to which he has accustomed himself and which he has always tacitly received as meeting all sanitary requirements, are in fact flagrant ex-

hibitions of the infraction of the most elementary sanitary principles.

2. The importance of sanitary conditions and the toll in disease and death which the infraction of sanitary principles exacts. The actual cash value which reduction of disease and the saving of life which the adoption of right principles will effect will represent a high value on the money and time involved.

3. Having appreciated these points, it is easy to pass to the third, education of the methods which have been placed at the disposal of the population under our charge, aimed at the mitigation of unsanitary conditions. I am convinced that many persons at the present time are unaware that measures which have been devised for their benefit are on our Statute Books, and can be invoked by them when necessary. When the fact has become known that means have been prepared aimed at the amelioration of unsanitary conditions, I feel sure that our services will be more frequently called for, and with added experience, still better means will be devised wherewith to act.

And what shall be the methods by which our educational campaign shall be carried on?

1. Reference has already been made to the effect which ought to follow from the teaching of the children. The opportunities of emphasizing the importance of sanitary conditions which the medical inspection of schools will afford should be seized, and the results should be far reaching.

2. The power of the press can be utilized. The effects which have been secured by the publication of Bulletins in our local and family papers, such, for instance as those of late appearing at the instance of the Provincial Health Board, must be salutary.

3. Lectures, Health Exhibits, and the distribution of literature all have a place in the propoganda.

By persistence in our endeavors along these lines, we may feel confident that all communities, urban as well as rural, shall benefit. It is undeniable that what may suit one may not suit the other, but when the suitable flexibility has been attained which will permit our Health ordinances to suit all conditions of living, whether in a crowded urban or a scattered rural constituency, has been attained, we may confidently expect a great improvement in what are at present unsatisfactory conditions.

PREVENTION OF LOBAR PNEUMONIA; CAN ANYTHING BE DONE?*

By MATHIAS NICHOLL, Jr., M.D.
Director, Division of Publicity and Education

THE statistics at present available regarding the incidence, distribution and mortality of acute lobar pneumonia in any one state or throughout the country are of value only in permitting us to draw certain broad conclusions regarding this disease.

Until lobar pneumonia is made reportable and physicians are compelled to give more complete data regarding "pneumonia" deaths, no accurate epidemiological data can be hoped for.

In the registration area of the United States in 1913 there were nearly 84,000 deaths from pneumonia of all types—approximately 132 per 100,000 population—a greater number than deaths from tuberculosis and cancer respectively.

In the entire State of New York in 1914 there were reported 7,381 deaths as due to lobar pneumonia and 1,409 to undefined pneumonia. What proportion of the latter should reasonably be included under lobar pneumonia is pure conjecture. Of the total number of deaths in the State, the City of New York accounted for 5,148, leaving 2,233 for the rest of the State. In other words, among approximately the same number of people more than twice as many deaths occurred in the largest city as in the smaller up-State cities and rural communities combined.

An analysis of the mortality figures for the City of New York shows that the greatest number of deaths occurred during middle age. In childhood the sexes suffer equally, while throughout active adult life approximately twice as many men die from this cause as women; finally, with the approach of old age the mortality of the sexes is approximately equal. These facts are significant and will be later referred to.

The disease has a well-marked, seasonal incidence. Beginning with the advent of cold weather, the number of cases rapidly increases until the maximum is reached in the late winter or early spring.

The discovery of the pneumococcus organism is to be attributed to Sternberg and Pasteur, its definite relation to pneumonia to Frankel and Weichselbaum, who also showed the morphologic identity of the organism with that occurring in the sputum of many healthy individuals.

No decided advance was made in the study of this organism or group of organisms until very recently when Doctors Cole, Dochez, Avery and their co-workers at the Rockefeller Institute for Medical Research were able to demonstrate that there were innumerable types of organisms belonging to the pneumococcus group, nearly all morphologically identical but differing and distinguishable by their virulence and immune reactions. (See article by Dr. Cole.)

Much further work remains to be done before it is possible to establish these facts beyond the possibility of dispute; nevertheless they present to-day the first gleam of light on a heretofore obscure field of bacteriology. In the interest of preventive measures which may in the future be instituted in order to diminish the incidence of the disease, it is to be devoutly hoped that the hypothesis of Dr. Cole may stand the test of time. Until the appearance of this work, pneumonia was universally regarded as a disease caused by organisms present in the respired air and the nose and throat of many, if not most, individuals, and that in order for an attack of pneumonia to occur it was only necessary that the normal vital resistance should be lowered; that is, the disease was essentially an autogenic infection.

Stripped of technicalities, Cole's work goes to show that this autogenic type of pneumonia comprises only 20 per cent. of the cases, 80 per cent. being caused by pneumococci of one of three types which

*Reprinted from "Health News" of New York State, Feb. 1916.

are found only in the sputum of pneumonia patients affected with these types or of those persons who have been in contact with them (carriers).

Thus in a bacteriologic study of 32 cases of lobar pneumonia due to these so-called fixed types of organisms, Dochez* reports that in 13 persons (40.6 per cent.) closely associated with the cases, there were found in the throats the same type of organism as that causing the disease. Again cultures from the throats of 113 individuals, some of whom were known to have been in contact with cases of pneumonia, gave the following results: In 47 instances (41.6 per cent.) there were no pneumococci present; in 55 (48.6 per cent.) pneumococci of the sputum type were present; in 11 (9.6 per cent.) pneumococci of the fixed type were present, but in every case in which the latter were found there had been actual contact between the persons and a pneumonia patient.

Dochez furthermore shows that pneumonia patients after recovery retain in their throats the same variety of organism as was found during the course of the disease, for from 12 to 90 days, with an average of 28 days; after which the sputum type of organism replaces the fixed type, or pneumococci are absent. Contact carriers of fixed types of organisms were shown to persist for 23 days or more.

To summarize: One pneumonia patient in five acquires the disease by having lowered his resistance to a variety of pneumococcus which is found in the throats of approximately one-half of healthy individuals. His attack is apt to be of moderate severity and recovery follows in a great majority of instances. Four other patients in five acquire the disease less directly on account of lowered resistance, but for the reason that they have become inoculated by way of the throat and nose, through direct contact with a pneumonia case or a carrier, with a type of pneumococcus only associated with disease conditions. Their chances of recovery vary with the type of organism present, but they are very much less than can be hoped for in the first class of cases.

It is obvious then, that any possible preventive measures against pneumonia must come under two definite heads: (1) Those directed against the lowering of bodily resistance, more important in the first class of cases, and (2) measures directed against the spread of fixed types of pneumococci (applicable principally to the second class of cases).

Among the factors which create lowered resistance, the abuse of alcohol is perhaps the most important. With the apparently growing appreciation of thinking persons throughout the civilized world of the dangers of alcoholism it would seem probable that this factor as influencing the incidence of pneumonia may reasonably be expected to become of less importance. A second important factor is that of bodily fatigue. The marked predominance of pneumonia during active life among males is unquestionably due to these two influences.

Sudden chilling of the body should also be recognized as of importance while the lowering of resistance by previous disease is too obvious an influence to be dwelt upon, nearly all pneumonias are preceded by so-called "colds."

In order to institute measures directed toward diminishing the spread of disease types of pneumococci it is first of all of importance that pneumonia should be seriously regarded as an infectious disease and treated accordingly, and in order to gain knowledge of its epidemiology it should be made reportable to the health authorities. Those in charge of pneumonia cases should realize the importance of protecting themselves against disease germs as in other infectious diseases. In time it may be considered advisable to institute modified quarantine for pneumonia patients until their sputum is shown to be free from organisms.

The influence of overcrowding in spreading infection cannot be over-estimated. This is clearly shown by the death rate of two to one in the City of New York as compared with the rest of the State. Such overcrowding seems to be inseparable from the routine of Metropolitan life—in the houses of the poor, in public vehicles, meetings of various kinds, entertainments, schools, offices, shops and even public thoroughfares. Any alleviation from this misfortune must come from an economic revolution, namely the estab-

*"Recent advances in the study of Pneumonia" A. R. Dochez, Bulletin, Vermont, State Board of Health, Dec. 1, 1915.

lishment of equal opportunities, for material and intellectual achievement together with entertainment in suburban and rural communities, better transit facilities within the cities themselves, the doing away with overcrowding in the home by the enforcement of tenement-house laws, and the building of better tenements.

Against the spread of the disease by carriers a campaign of education is essential to bring people to the realization of the dangers of the following:

Spitting in public places: so much has been done to mitigate this filthy practice that there is good hope that in the not-distant future it may be abolished.

Coughing and sneezing in public without the use of the handkerchief or hand before the mouth and nose is unquestionably a prolific means of spreading infection of many kinds.

The dangers of kissing on the mouth, especially of young and delicate children.

The dangers from the common drinking cup and hand towel are now pretty well understood, and they are being largely abolished in thinking communities.

Finally, there should be enforced much more rigid rules for the proper cleaning of eating utensils, cups and glasses in restaurants and other public places.

Pneumonia has been called the natural death of the aged, and death being inevitable, that due to pneumonia, well cared for, is perhaps as desirable a termination of life as any. The disease, however, shows the greatest incidence, during the active stage of adult life and against the occurrence of it at that time our efforts should be especially directed. No one can reasonably doubt that if such measures as have been outlined could by some miracle suddenly come into play, the occurrence of pneumonia would be tremendously decreased. Such a program may seem quixotic, and little more than a sanitary dream. It is nevertheless certain that dreams sometimes come true.

GENERAL MANAGEMENT OF LOBAR PNEUMONIA*

By DAVID BOVAIRD, M.D., New York City

LOBAR pneumonia is a disease produced by the growth and development within the lungs of certain definite germs, in most cases the twin-type cocci called the pneumococcus. The organisms growing in the lung produce certain poisons which, absorbed into the circulation cause the fever, prostration, rapid pulse, sweating and other constitutional symptoms of the disease. The changes induced in the lungs, consolidation, as it is called, together with the pleurisy which regularly accompanies the pneumonic process, cause the pain in the side, cough, expectoration, and dyspnoea, and give rise to the changes in the physical signs which the physician elicits upon examination. Sometimes the general, sometimes the lung symptoms occupy the foreground of the clinical picture. In the majority of cases there is a fair relation between the two, that is, the constitutional symptoms are severe when the pulmonary are marked and vice versa.

Both are as a rule proportionate to the extent of lung consolidation. If a whole lung or parts of both lungs, are involved, both pulmonary and general symptoms are more severe than if a single lobe is affected. But this is not always the case, and it is quite possible to see a patient severely sick or even dying of pneumonia with but a small patch of consolidation; or another scarcely feeling sick at all, though large areas of the lungs are solidified and out of service. A wide variety is thus presented in the clinical picture of different cases of pneumonia. Some experience little or no pain and hardly consider themselves sick; others suffer intensely, and many die of the disease. However mild the attack may appear at the onset, it may be attended by very serious complications, so that any patient sick with lobar pneumonia requires careful handling. No disease, the mortality of which varies from 25 per cent. to 50 per cent., can be regarded lightly.

From these general considerations it should be clear that we cannot wisely treat pneumonic patients on any routine plan; that indeed the treatment must be adapted to meet the needs of each particular patient and must vary with the conditions presented. Rarely does a winter pass without the publication in the medical journals of a new plan of treatment for lobar pneumonia, which some physician has found successful in a limited series of cases, and which he is confident will revolutionize the statistical results, if only his colleagues will adopt it. No such "plan" has survived the trial of wide experience or has been able to command the general support of medical men.

Just how much is to be expected from the efforts to develop a curative serum we do not yet know. The studies now going on in the Rockefeller Institute assuredly hold out a hope that a curative serum may be developed, but as yet that is not assured. We are, therefore, compelled to rely upon the measures which have commended themselves to the judgment of experienced and conservative physicians, not only in mitigating the sufferings of their patients but contributing in some measure to a lessening of the heavy mortality.

Rest is the chief of these measures. The patient must not only be confined to bed and the use of the bed-pan and urinal insisted upon, but every effort be made to spare him any unnecessary exertion or distress. He is to be permitted to take and maintain the attitude most comfortable to him. Usually he will lie flat on the back and quite straight, but occasionally he will find greater comfort in lying on the side. In the latter case he usually prefers to lie on the affected side, as this limits the movement of the inflamed and painful lung. Care must be taken not to overload the chest with bed covers and thus add to the burden of an embarrassed respiration. The ministrations of the nurse must be conducted with the least possible disturbance of the patient. In severe cases, even the daily cleansing bath must be restricted or dispensed with.

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Feeding must be managed in such a manner as to require the least possible effort. Even talking must be forbidden and the most complete rest enjoined. To this end also the physical examination of the chest by the physician, necessary as it is to diagnosis and to judgment of the course of the disease, must be carefully limited. Once the physician has satisfied himself of the presence of pneumonia, the physical examination should be repeated only on definite indications. Especially in hospitals where medical students are being taught must the greatest care be exercised lest in the effort to familiarize the students with the physical signs of the disease harm be done to the patient by too frequent examinations.

Fresh air is the next great aid to the pneumonic patient. Twenty years ago these patients were shut up in carefully closed rooms and steam kettles employed to provide moisture and vaporize some volatile antiseptic which, breathed into the lungs, it was hoped might check the activities of the baneful organisms and stop the progress of the disease. All such hopes and practices have been abandoned. To-day we know beyond a doubt that pneumonia patients, as a rule, do much better in the open air than in any artificial atmosphere. Fear of the dreaded draft has vanished, as we have grown familiar with open-air treatment.

For many years now in the Presbyterian Hospital we have treated nearly all our pneumonia patients in an open-air ward upon the roof. There they remain day and night, no matter how cold it may be. They are taken in-doors only when it is necessary to uncover them. For such treatment in winter it is essential that the bedcovers be sufficient to keep the patient comfortable and prevent chilling of the surface of the body. A knitted woolen cap is worn on the head. Thus protected the patient breathes the coldest air not only without danger but with great comfort. When we are unable for any reason to place a pneumonic patient in this ward, we regularly open the window of his room or ward or even push the bed up against the open window. The fresher the breeze that blows across his face the more comfortable the patient will be, and once he has experienced the open air treatment it is rarely that a patient will permit the windows to be closed or accept any substitute. Fresh cold air has certain definite effects in pneumonia. The patients breathe easier, they have less cyanosis, they are quieter and sleep much better; their ability to take and digest food is increased. It tends to lessen the fever. It definitely raises the blood-pressure and as a steadily falling pressure is one of the danger signals in a severe pneumonia and we have no other agent which can be relied upon to prevent the fall we value it accordingly. It has been shown over and over again that the change from the warm air of the ward to the open-air of winter will cause a rise of from ten to twenty millimeters of mercury in the blood pressure readings. For these reasons the open-air treatment of pneumonia is now regarded as established beyond question.

Careful feeding and the regular evacuation of the bowels are also essentials. Just what careful feeding means must depend upon the individual case. In some, the stomach may be so irritable during the early days as to make feeding by mouth almost impossible. Others can take and digest liquid foods and soft solids throughout their disease. Milk, broths, gruels, tea, coffee, ice cream and the like may usually be allowed. In difficult situations the food may require to be peptonized and the quantities greatly limited. It is desirable to feed the patient up to the limits of his digestive ability, as even then we usually fall far below the needs of the body under the conditions, but the greatest care must be taken to guard against overfeeding with resulting abdominal distension and increased respiratory distress. In a patient already struggling for breath even slight abdominal distension may be a serious additional burden. In teaching students, the writer constantly emphasizes the fact that we have no means at our command to influence directly the process in the lung, but we can do much for the pneumonic patient by watching and endeavoring to control the abdominal condition. The food must be limited to the digestive powers, and the bowels daily emptied by an enema. Cathartics or laxatives too

often fail or only increase the abdominal discomfort to warrant their use.

Under this heading a word must be said regarding the use of alcohol. From time immemorial alcohol has been given in pneumonia in the belief that it strengthens the heart. All belief in such power has long since been abandoned. Instead we have learned that alcohol has a certain value as an easily assimilable food and we know that many patients take it with satisfaction. To such it may be given. Especially is it best to give it regularly to the patient who has been accustomed to its daily use. Water should be given every patient as freely as he will take it.

These things—rest, fresh air, careful feeding, and systematic evacuation of the bowels—are the fundamentals in the management of lobar pneumonia. For the rest, treatment resolves itself into careful observation and efforts to relieve untoward symptoms as they may appear. Of these but two, pleuritic pain and circulatory failure need be considered in this article. Severe pain in the side, pleuritis pain, often constitutes a most distressing early symptom of pneumonia and it may persist throughout the course of the disease. For its relief various measures may be employed. Strapping the affected side to immobilize it, is a rational procedure, sometimes brilliantly successful, but also unfortunately often a failure. Flaxseed poultices or mustard pastes, repeated according to indications, may be grateful. If mustard is used, care should be taken to avoid blistering. Often the constant application of an ice bag proves more helpful. Finally, morphine or codeine may be required, but these drugs must be given with the greatest care, as it is quite possible to do harm by further hampering the respiration.

Circulatory failure is the most dreaded feature of pneumonia. This was long spoken of as heart failure, but we now know it to be caused rather by the effect of the disease upon the whole circulatory mechanism including the arteries and veins throughout the body as well as the heart. The surest defence of the pneumonia patient is a sound heart and a perfect circulation. It would be well if every physician could say of his patient as Dr. MacLure says of Saunders in "Beside the Bonnie Brier Bush"—"He hasna' abused nature and nature willna' fail him in his oor o' need." If, despite all possible care, we find our patient's pulse growing more rapid, feeble and irregular, the cyanosis deepening, the respiration becoming more rapid and jerky and the prostration increasing, we must call upon the last resources at our command. Of cardiac stimulants the theoretically efficient are caffein, camphor, and the intravenous use of normal saline solution. Of these caffein may be given with confidence; camphor is much less certainly efficient. Either of these drugs is best given in the form of a hypodermatic solution, for under the conditions indicated absorption from the stomach or intestine is very uncertain and slow. The intravenous use of normal salt solution is a measure which calls for the greatest care in its administration, yet in some desperate cases it has proven very effective. The value of digitalis preparations in pneumonia is still a mooted question. It may, however, be safely said that most practitioners of experience use digitalis in pneumonia with some confidence that beneficial results are obtained. If it is to be used it must be remembered that given in the ordinary manner, that is by mouth, digitalis is a slowly acting drug, requiring from twenty-four to forty-eight hours to produce definite effect. If then we are to use it in this manner the development of circulatory failure must be anticipated and the administration of the drug begun in any doubtful case before the development of the evidences of its need. Otherwise we must, instead of the usual method of administration, rely upon the hypodermatic or intravenous use of some of the newer preparations, particularly digipuratum. With one or more of these measures we may be able to meet serious circulatory symptoms and bring the patient safely through the peril of his disease. Even in the most desperate situations we should have courage and fight on in the knowledge that there is usually a definite duration to the disease and that any day after the third or fourth may bring the crisis and witness the sudden transformation of the patient from a condition of great peril to one of comfort and security.

BACTERIOLOGY AND PRESENT STATUS OF SPECIFIC TREATMENT OF PNEUMONIA

By RUFUS COLE, M D.

Director, Hospital of the Rockfeller Institute for Medical Research

IN the great majority of cases of pneumonia, pneumococci are present in the lungs. In a smaller number of cases other bacteria are present in the lungs, often unassociated with pneumococci. Such bacteria are streptococci, influenza bacilli and bacillus pneumoniae. The absolute proof that all these bacteria bear a causal relationship to pneumonia is still lacking. That they may be present in pure culture in the diseased lung, however, and are frequently present in the blood of the patient suffering from the disease indicates at least that they play an important part in the process. Moreover, it is possible to produce pneumonia in dogs, and even in rabbits, by the injection of cultures of these organisms through the trachea directly into the lungs.

The fact, however, that pneumococci have been found present in the mouths of from 40 to 80 per cent. of normal individuals has made it difficult to understand how these bacteria can cause pneumonia unless there is some other primary or predisposing factor.

Lately it has been found, however, that the pneumococci found in many cases of pneumonia differ in certain particulars from those commonly present in the mouth in health. These differences are not cultural, but are only detected by so-called immune reactions. These peculiar reactions of bacteria to the serum of animals immunized against them are very specific. It has been found that using these reactions as criteria pneumococci found in cases of pneumonia may be divided into at least four groups. All the organisms of group I are alike so far as their immune reactions are concerned. The same is true of the organisms of group II. In group III the organisms also show peculiar immunity reactions, and in addition they differ from those of the preceding groups in that they have larger capsules and form a sticky exudate in animals. In the fourth group are placed the remaining pneumococci. These have been found to show no common immunity reactions and in general they are much less virulent for animals than are those of the preceding groups.

The cases associated with the pneumococci of the various groups do not show any constant clinical features, characteristic for the various groups. The cases do differ, however, as regards severity. The mortality in the cases caused by pneumococci of groups I and II is about 25 to 30 per cent. These cases form about 60 to 70 per cent. of all the cases of acute lobar pneumonia. The number of cases associated with pneumococci of group III is much less, probably not more than 15 per cent. The mortality in this group of cases is very high, 50 per cent. or more. The cases due to these three groups, therefore, comprise 75 to 80 per cent. of all the cases of acute lobar pneumonia which are associated with the presence of pneumococci.

The pneumococci found in the remaining cases belong in group IV. The cases with which they are associated frequently run an atypical course, and the mortality is low. Now it has been found that it is this type of pneumococcus that is commonly found in the mouths of healthy individuals. In certain instances pneumococci of the first three groups (which have been called the fixed types) have been found to be present in healthy mouths, but in all such instances the persons from whom such organisms have been isolated have been very lately in close contact with persons suffering from pneumonia, and in all such cases it has been found that the type of organism found in the normal mouth corresponds with that found in the patient.

Though much more work is required before we shall have full knowledge concerning the epidemiology of pneumonia,

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these observations suggest the following explanation. For a pulmonary pneumococcus infection to occur, at least two factors are probably responsible. First, the conditions in the host, local, general or both, must be favorable for infection, and second, an organism of suitable virulence must be present. With organisms of the type ordinarily found in the mouth, probably the changes in the patient are of chief importance. With pneumococci of the fixed types, however, the presence of the organism is of great importance, and may even determine the onset of the illness. Even in this case, however, changes in the resistance of the patients are probably of some importance, since as stated above, under certain circumstances healthy persons may carry these fixed types without becoming themselves infected. We now know, however, that healthy persons not infrequently carry diphtheria bacilli, and the role of healthy carriers in the spread of typhoid fever is well recognized. The result of these newer studies in the bacteriology of pneumonia, therefore, affords support to those who have laid stress on the contagiousness of pneumonia. There are all degrees of contagiousness, however, and further studies are required to accurately define its importance in pneumonia and to determine to what degree the prevalence of this disease may be limited by taking this feature into greater consideration.

Whatever the importance of these facts may be as regards epidemiology, they are of fundamental significance as regards specific treatment. The sole purpose of serum or vaccine treatment in any disease is to supply to the infected animal the immunity factors which are present in the animal naturally or artificially immune to the disease. By administering serum, the immunity principles are supplied directly; by administering vaccines the attempt is made to stimulate the patient to supply his own immune substances. These immune substances are very specific, and it is now everywhere recognized that diphtheria antitoxin neutralizes only diphtheria toxin, and that one can only immunize an animal against typhoid bacilli by administering typhoid bacilli. As long as all pneumococci were considered identical, it was thought that immunization against one race was immunization against all. But it is now known that so far as the immunity reaction is concerned, one might as well try to produce immunity to type I pneumococci by the administration of colon bacilli, as to use type II organisms for this purpose. Since this reaction is so specific we can only hope to obtain therapeutic results from specific immunity reactions if we can be sure in each case of the type of infection with which we are dealing, in order that the therapeutic measures employed may correspond.

It is now possible to do this. By proper laboratory procedures it is possible to determine in almost all cases within 6 to 8 hours the type of pneumococcus present. It is then possible to administer the corresponding serum. The fact that this question of specificity was not considered in the past might be an explanation of why the results of serum treatment in pneumonia have not been any better. Serious attempts are now being made to properly employ serum treatment in this disease, taking the above facts into consideration. So far as the cases due to pneumococci of type IV are concerned, it would be a practical impossibility to employ serum, since, as we have said, each race is distinct and a serum against one race would have no effect against others. Up to the present it has been impossible to produce an effective serum against organisms of type III. At this time, therefore, the question resolves itself into an attempt to treat cases due to pneumococci of type I and Type II; however, 60 to 70 per cent. of all cases of acute lobar pneumonia and over 60 per cent. of the deaths occur in cases associated with these types. A serum having high protective power experimentally against organisms of type I has been produced, and one of somewhat less potency against organisms of type II. The results of serum treatment in the cases of type I have so far been very satisfactory, and in the cases of type II less so, though it is hoped that certain modifications which are being made may render this serum also efficacious. If serum treatment should prove of value only in cases due to type I, however, the mortality from this disease may be considerably reduced. In order

to obtain effects from the serum, it has been found necessary to administer it early in the disease, in large amounts, injected intravenously.

In making attempts to carry out vaccine treatment, the question of difference in type of pneumococci will have to be taken into consideration, just as it is in serum treatment. The outlook for obtaining favorable results in this disease from vaccine treatment, however, does not seem very favorable. This opinion is based both on theoretical considerations and on reports of practical tests already made.

A third possible form of specific treatment of pneumonia is by chemotherapeutic measures. A chemical substance, to which the name "optochin" has been given, has been found to have a specific poisonous action on pneumococci. This action is the same on all the types of this organism. It is impossible to give very large doses of this drug to man, however, on account of the danger of causing injury to eyesight and other unfavorable symptoms. A sufficient number of cases have not yet been treated with this drug to determine whether, in the small doses it is safe to employ, it has a definitely favorable action on the course of the disease.

It seems likely that from these newer discoveries in the bacteriology of pneumonia practical measures will be devised for lessening the frequency, and also for lowering the mortality of this widespread and devastating malady.

MEDICAL INSPECTION OF RURAL SCHOOLS

By DR. S. A. FULTON, M.H.O., of Colchester County, Truro, N.S.

Conference of Medical Health Officers of Nova Scotia, 1915.

ON speculating as to why my name should appear on the programme to-day, with a view to placing the blame upon some one other than myself I have arrived at the only possible conclusion, viz: that I alone am to blame.

I have long since felt that with the majority of County Medical Officers the position means nothing. The legislature requires the municipal council to appoint a medical officer each year and provide a machine for him to set in operation. In most of cases, however, the machine is rusty and the operator is sound asleep. The people regard the health officers, sanitary inspectors, etc., as necessary evils to whom they can occasionally appeal when their neighbor's property is not up to their ideas of sanitary perfection, and upon whom they heap abuse when the unsanitary condition of their own back yard is mentioned to them. With the idea of making myself worthy of the office and of doing something of real value, I suggested to our Provincial Health Officer the possibility of making a start in school inspection in rural Colchester and of otherwise doing something in the way of furthering the education of our people through the schools, in school hygiene and sanitation generally.

Little did I think that Dr. Hattie would pay much heed to my suggestion or would take my remarks seriously, but I should have known better. With a devotion to his work that we all might emulate, with the keenest desire to employ all his resources for the advancement of sanitary science in our province, and with a tactfulness unexcelled, Dr. Hattie seized upon my remarks, and suggested that I write a short paper for this association, in such a way that I could not well refuse. The fault is mine. I talked too much. In future should any similar ideas suggest themselves to me I shall talk with a less dangerous person than our Provincial Health Officer.

It is not my purpose to discuss the value of medical inspection of schools. That, I think, needs no defence in this meeting. Nor do I purpose speaking of an ideal system of inspection, which can be obtained from any standard text-book on the subject, but rather to mention a plan which occurred to me for the inspection of our rural schools and the distribution throughout the community of literature or health matter, with special reference to Colchester County.

From personal experience in a rural community I appreciate fully how a great deal of good might accrue from a small expenditure of energy and money. Rural schools, as you are all well aware, do not always bear very well a critical sanitary inspection, nor do those in attendance always observe all the laws of hygiene, and yet I am not so sure but that in this respect the pupils fare as well if not better than in city and town schools. For in the rural communities overcrowding, with its attendant evils, is not so frequent, and, too, Nature's remedies have a much better chance to operate. There are, however, certain conditions that might be much improved by a few suggestions from some one trained in such matters.

My idea is not so much to have a complete medical inspection of the schools in rural Colchester as it is to conduct an educational campaign by means of a trained nurse and through the schools. I am sure you will agree with me that through no other source can we reach the same number with as little expense. Had we unlimited means we could very easily have a complete system of medical inspection put into operation. Lacking available money for this purpose and lacking also the realization of the great need for such work on the part of the people, I am convinced we can make a start in the work through the schools by the occasional visits of a nurse trained in such work, with the co-operation of the teacher.

In Colchester County we have a nurse available for this work. The branch of the Victorian Order of Nurses in Truro employs two nurses, one to do town work, the other to attend to calls outside the town and to do school work in Truro. The County nurse responds to calls from any physician and from any of the Municipal Councillors. To the support of this nurse the Municipal Council contributes the sum of $300 per annum, in consideration that she be available in the County at all times, free of charge to the patient except for travelling expenses and board. From the standpoint of professional nursing in the County such a nurse is a failure, and it must of necessity be so, since at the best she can only be an emergency nurse, and as a rule the emergency is over before she can reach the part of the County where her services may be required. True she can be of much benefit to those patients who are looked after by the town physicians, as she can go to her case with the medical attendant. The number of people, however, reached in this way, is only a small proportion of the total population.

It was with the idea of utilizing this nurse that the plan of working in and through the schools was conceived. The County nurse here is a very excellent nurse, and has had special training in school inspection.

My plan is to have her visit each school section in the County, and spend there a day or two. During this time she will visit the schools and inspect each pupil, keeping a simple record of defects or apparent defects, and communicating directly or by a card system with the parents of those children requiring medical attention. At her visit, in co-operation with the teacher, she will give the pupils one or two simple talks on health matters —taking as her topics such subjects as are so carefully thought out and brought to our attention through leaflets by the Provincial Medical Officer—e.g. "The Menace of the Fly," etc., etc. These talks could be very well continued by the teachers occasionally, until the nurse's next visit.

When the nurse makes her second visit she would pay special attention to those pupils in whom she found defects at her first visit. Should the affected child not have received attention she could visit the parents, to explain the nature of the trouble and emphasize the need of having it remedied.

Through the school, too, I think it would be quite proper to reach the parents with the leaflets issued by the Provincial Health Officer, and in that way have these matters brought more closely to the attention of the people than by any other means. I am convinced that it is useless to try and distribute these leaflets through the members of the local health boards. They are all busy men and do not have the time nor perhaps the inclination to communicate with as many people as could be reached through the schools.

I have discussed this rough plan with our school inspector, who realizes fully the need for such work, and he has expressed himself as being more than willing to co-operate and have his teachers assist in the work.

The expense of such an undertaking, in addition to the appropriation already voted by the Municipality, would be very small and would be arranged by the Councillor for the section.

Such then is a rough sketch of what we hope to be able to carry out this autumn and winter. There are many details to be worked out, but I feel quite confident that the apparent difficulties can be readily surmounted. It is not by any means an ideal system of rural school inspection but rather a beginning at such, and a missionary campaign in health matters through the schools, from which I trust may be evolved something of real value to the people.

SOME PRESSING PROBLEMS OF MODERN TIMES

By SIR THOS. OLIVER, M.A., M.D., L.L.D., D.Sc., F.R.C.P.

Professor of the Practice of Medicine in the University of Durham; late Medical Expert, Home Office Committee on Dangerous Trades.

CAN it be otherwise than that to most of us life will be ever other than a struggle? Medicine, surgery and hygiene have reduced the death-rate, robbed disease of much of its terror and made the treatment of it more successful; but civilization, by conferring benefits, only tends still further to increase wants and to create greater discontentment, which find expression in renewed endeavor on the part of man. Genuine dissatisfaction is the stimulus which helps to raise us above the causes of our discontent. It is thus that humanity has risen to higher things and presses onward to further ends. Writers tell us of the progress which is manifest in all affairs of life, but when we come to ask ourselves in what that progress consists, is it not rather that there has been a forward movement too much in one direction only, and that since the present is an age of mechanical invention, the advance concerns itself more with the material than with the spiritual side of man's nature? When the history of the nineteenth century comes to be written and a reckoning made of the contribution by modern nations to general civilization, will there be any eulogium passed upon the addition which our age has made to art, sculpture and literature, or will only a bald statement be made of its mechanical cleverness, its utilitarianism, its pursuit of wealth and relaxation of duty?

Competition and the struggle for existence do not lessen with the march of time. Just as in the animal and vegetable kingdoms the fight is for superiority, so in the larger world of man the struggle is for individual and national supremacy. It is less demanded of a nation that it should stand well in the opinion of other nations for its moral excellence, the high tone of its laws and its intellectual attainments than for the exercise of power and for its effort to sway the destiny of other peoples by the superiority of numbers and military training. A height attained must be maintained. To retain commercial and industrial supremacy, there can be no slackening off of discipline by a people, nor relaxation of those efforts which raised it to the position it occupies; for prosperity undermines and wealth neither evokes energy nor creates enthusiasm for the higher things of life. It is with nations as with man—the stimulus to personal advancement is not prosperity and wealth, but ambition, ability and want.

No individual, no people, has a right to court misfortune. Poverty, disease and early death are misfortunes. Except under the peculiar circumstances in which it has occured, we can hardly regard death itself as a misfortune, since it is the common lot of all men, but early death with life's promise unfulfilled and the breadwinner's task inadequately discharged is a misfortune, from which most of use prefer to be delivered. Nor is industrial disease less a hardship, since no occupation by which a man or woman seeks to earn a living should become a cause of ruined health and of prospects destroyed. In days gone by it was a misfortune when a worker in a match factory developed phosphorus necrosis, and had to have the half of his jaw-bone removed; and it is to-day a hardship when, as the result of working in lead, a man becomes paralyzed in his hands and wrists, and is unable to earn his living. It is not alone the fact of the individual himself suffering, but of his inability to earn an income and support those who are dependent on him. It is to lighten such a burden that the Workmen's Compensation Act is in operation. As the risks of each trade are not all alike, it was felt that each trade must financially be prepared to meet the liabilities of its own creation. Poverty is dreaded, and

properly, on account of the lack of opportunity for education and self-improvement, also of the enforcement of individuals at an early age into spheres of labor wherein further development is impossible.

What are the circumstances which tend to keep thousands of the working classes in the lowest social positions? This is a large question, but setting aside the depressing influence of having been born into that stratum, long continuous unemployment, intemperance and insufficient wages, early death of the breadwinner through accident and occupational disease, the incidence of tuberculosis and of other maladies to which all of us are liable are the main causes.

In order to ascertain what are the principal causes of widowhood in one section of the better-paid working classes, I have, through the kindness of the General Secretary of the Boilermakers' Society, been able to take the causes of death of the members of this society for the last thirteen years. The society has a membership of upwards of 66.000. Taking the figures for the years 1900—1913, I find that the average percentage of deaths to total deaths from accidents is 4.31; from kidney disease, 3.23; malignant disease, 4.54; heart disease, 15.33; pneumonia, 9.51; and tuberculosis, 11.75. The largest number of fatal accidents occurs among the younger men in the two decades 20 to 40 years of age. The mortality from heart disease is high—it is 15.33 per cent. of all causes of death—the interesting point being that the death-rate from heart disease rises as age advances. The death-rate from pneumonia is high owing largely to the fact that the men at work are exposed to all kinds of weather. Between 40 and 60 the mortality from pneumonia is high. Tuberculosis claims its victims at an early age. At 23 tuberculosis is asserting itself; the mortality rate continues to be high till over 50 years of age, that is, it lasts all through the best period of a working man's life. Among boilermakers heart disease, tuberculosis and pneumonia carry off the largest number of the members. Compared with insurance offices, which deal with another class of lives, the claims of malignant disease are small—only 4 54 per cent. as against the 10 to 12 per cent. of insurance offices.

A striking social feature of the present age is the claim for independence of women and the recognition of their rights. During the last fifty years new avenues of work have been opening up for women. The increasing absorption of young women into spheres of industrial and commercial activity, while tending to lighten the burden of parental obligation, is creating problems which in their final issue concern the future of the race. As effects of the withdrawal of female life into industry mention may be made of the weakening of the home instincts, dislike of the trivial round and common task, a love of independence and a growing taste for pleasure and excitement, so that if marriage is entered upon, there is a growing unwillingness to accept the duties and the responsibilities of motherhood. Women call for emancipation. From what do they ask to be emancipated? Is it from the thraldom of sexual inequality which Nature has imposed upon them, or from the impediments which time and custom have created? While this is not the place to discuss the latter problem, it is the occasion on which to invite attention to another question arising indirectly out of some of the remarks which I have made. I refer to the declining birth-rate of this and other countries, not simply as a fact but as to the supposed advantages, personal and economic, which the limitation of family is supposed to confer, also its effects upon the industrial activity of the country. There is not the least doubt that the depopulation of civilized countries will become one of the great questions of the future.

Since the seventies, when the attention of the British public was in a flagrant manner directed to the subject and how the object might be attained, the birth-rate of this country has been steadily declining. In my own neighborhood the birth-rate has fallen about 0.2 of a child per year since 1877. For a period extending over several decades, the birth-rate of France has been progressively and seriously dwindling, largely through influences primarily within its own control. In the United States a similar phenomenon is observed, while in Germany so serious has become the decrease that it is receiving attention, since with the Fatherland having spread its roots to the

East, and having absorbed part of the Kingdom of Poland, the reproduction at a more rapid rate of the absorbed foreign population—retaining as it does, its own language and its national characteristics—is bound to raise problems of race and politics, of government and religion, the consequences of which it is impossible to foretell. A declining birth-rate and a falling mortality rate run concurrently. In some of the German States the decrease of natality since 1875 has been as high as 40 per cent., in others 28.5 per cent. The decline is noticeable in the towns and in industrial centres, but in Berlin it is most marked of all. In the Prussian capital the birth-rate has fallen from 149 per 1.000 women to 73. During thirty years, marital fertility has fallen from 240 to 80, and this not amongst the poorest classes, but in the better-class districts of Berlin. The small incomes of the university and educated classes may be one explanation of late marriages, a circumstance in one sense to be regretted, since it is the children of such people who, theoretically speaking, are most required by the State.

A wave of sentimental social economy has been passing over western civilized nations, and to this circumstance part of the decrease in the birth-rate is due. It is to the credit of Roman Catholicism that among its adherents there is a smaller declension than among the Protestants and Jews. Just as religion is not without its influence for good in restricting the decline, so, on the other hand, are advanced political views harmful, for where social democracy is most to the front, there a declining birth-rate is most pronounced.

Dr. Max Gruber maintains that the decline in the birth-rate is a serious menace to Germany, situated as she is so near to Russia, with her several millions, her large surplus birth-rate being able to allow of her high death-rate. In the year 1912 it was estimated that 113 births per 1.000 women aged between 20 and 25 were necessary to recruit the city of Berlin, but it appears that only 73 births took place. Berlin, like Paris, is beginning to rely for its increase of population upon outsiders. In the industrial districts of Germany, just as in some of those in England, the number of births is not sufficient to supply the population required by the expansion of industries.

The following table, taken from the "Revue Bleue," 1913, shows the decline in the population of various European countries:—

	Per 1,000 inhabitants. Infants born alive in 1909.	Fall of birth-rate during last 30 years.
Russia	48.0	1 per 100
Austria	33.6	12 "
Italy	32 4	13 "
Finland	31.3	13 "
Germany	31 0	18 "
Holland	29.1	19 "
Denmark	28 3	12 "
Switzerland	26.3	12 "
Norway	26 2	16 "
Sweden	25 6	14 "
England	25.6	25 "
Belgium	24.9	21 "
France	19 6	21 "

Between 1880 and 1909 the birth-rate fell per 1.000 inhabitants in Berlin from 38.7 to 23.1, in Vienna from 39.1 to 23 78, in London from 34.8 to 25, and in Brussels from 34.2 to 16.9. In 1878 the number of children born alive in Germany was 48 per 1.000 of the population, in 1910 it was 30.7. The population of Germany in 1840 was 32.8 millions, and that of France 33.4 millions; in 1910, Germany had 64.6 and France 39.3 millions. In England, while the surplus of births is small, our decline numerically as a nation has been prevented by our small death-rate.

Lord Haldane in a recent address spoke of the diminishing birth-rate as a serious national problem, and remarked that it was not altogether an evil, since it might mean a desire, on the part of parents, to bring up children in a way they were not brought up before. The subject is one civilized nations will have to face, and especially the great still-born percentage and the operation of causes which destroy life at its commencement. The important problem we have to consider is, whether when a nation has once adopted means to diminish its birth-rate, its people have the power of will and the wisdom to arrest the movement. History says "no." The ancient civilizations of Greece and Rome disappeared owing to the insufficient number of children born within the leading races. In an interesting table Gruber shows us that since the Battle of Waterloo, France has only added 9 8 millions to her population, i.e., her population has increased one-third. Great Britain and Ireland during that period have more than

doubled their population. The German Empire, including Prussia, has quadrupled hers, Austria has increased her people one and a half times, Finland three times, and Italy has increased her population by one-half. A little over a century ago, France had the largest population, now she occupies the fifth position among the nations, and that position is only maintained by the immigration into the country of one and one-half million people every year.

Italy, too, is an object-lesson. According to Fricks Italy had a population of 22 millions, 220 B.C. In the second century of the Christian era this had fallen to ten millions, and two centuries later the population numbered five millions. At the commencement of the Second Punic War Italy had 270,000 citizens fit to carry arms —at the time of Augustus there was doubt as to whether she could raise 45,000 men; the interesting point being that all this reduction of population took place during a long period of peace. And what was the effect upon Italy? Her lands began to pass out of cultivation, her fields became veritable swamps, hot-beds of malaria and breeding-places of plague, and all for the want of man. It is when a nation, having attained a high position in civilization throws aside those implements which enabled her to struggle successfully into position, when obligations are no longer accepted and fulfilled because they are unpleasant, when the responsibilities of fatherhood and motherhood are avoided, when duty is sacrificed to comfort and ease, that that nation has begun her downward course, and has become the victim of circumstances of her own creation. A people's selfishness thus becomes a nation's peril. After the close of the Franco-German War, wherein lay the hope of France? In her town population? Nay! Was it not her thrifty peasantry with their large and healthy families who saved the country, and won for themselves the encomiums of the civilized world? A nation's worth, like a nation's hope, rests not necessarily upon one class of society, but upon the members of all classes who are thrifty, who are leading normal lives, and who are discharging simple duties to the family and the State.

Elsewhere I have drawn attention to an increasing unwillingness on the part of the wives of the working classes to accept the responsibilities of motherhood, also to the use of diachylon for the purpose of destroying infant life at its inception. It is not only that the practice is largely responsible for a decline in the national birth-rate, but that it is attended with risk to maternal life and the possibility of female life receiving a blow from which it may never fully recover. By having taken less than two-pennyworth of diachylon and aloes, I have seen young women run the gauntlet of losing their lives, seen them paralyzed in hands and feet, lose their eyesight, pass through a long and trying illness, and for months afterwards be nothing but a drag upon the financial resources of a husband with slender wages.

In some instances, no doubt, the small wages of the husband may have indirectly been the cause of the drugs having been taken, since the prospect of an addition to the immediate circle was likely to entail a further drain upon the already strained wage-earning capacity of the family; but I feel certain that in a large number of cases the cause is not an economic one, but is simply the indication of a desire on the part of parents to undertake the fewest responsibilities possible. It is for this reason that the voluntary limitation of family is reprehensible. We admit that maternity is not without its dangers, and that, where these have been experienced and recovered from, there is little encouragement to a woman to accept further risks of motherhood. But my argument is that in a growing number of cases the risk is never run at all, and this, too, by classes of society to whom the economic aspect of the question does not apply. It is circumstances such as these which makes the problem complicated. When wages are small, it is easier, no doubt, to bring up a family of three or four children more comfortably than one of seven or eight, but large families, even among the working classes, have their compensation. There is more thrift in the home, a higher ideal of life as a whole, greater emulation among the members of the family, and, in consequence of the plainer and more whole-

some character of the food, better health among these children than where there are only one or two. A State may, by preventing the sale of certain drugs, be able to some extent to check the destruction of human life after its commencecent, but it cannot control conditions operating to prevent life coming into being, since under these circumstances life has neither been threatened nor destroyed. The least that can be said of this form of indulgence is that the debt is not being paid to the race which origination from it imposes, and but for the payment of which the race cannot be maintained. The rationalization of sexual life is one of those catching but misleading tenets of the time, by the adoption of which men and women seek to show themselves superior to Nature and capable of arranging their life in accordance with science. Knowledge is misapplied if the end is selfish. Civilization may for a period seem to rise superior to the operation of Nature's laws, and people may point with a sense of satisfaction to the greater family wealth and personal comfort secured through limitation of family, but as in the case of France a day of reckoning comes, if not to the individual, certainly to the race. Evolution, heedless of the individual, yet so careful of the race, is frequently cruel in her methods, but man in his effort to make life easier for the individual through artificial limitation of family is only playing a brief game in which Nature in the end is sure to win.

Our family life is changing. As boys and girls grow up, they seek employment, and by becoming wage-earners at an early age they prefer rather than contribute to the family exchequer to leave home and be independent of parental supervision. Our young womanhood, too, is becoming equally independent and thinks little of forsaking the protection and comfort of home. Filial ingratitude is thus weakening the bond of family attachment and discouraging the acceptance of parental obligation. And yet it can hardly be that where a mother lays herself out to be all that the word "mother" implies, she will, even in the case of wanderers from the fold, be ever else than loved by her children, despite the changing circumstances of time and our altered attitude in regard to the value of self-sacrifice. Mothers must do nothing to weaken the links which bind child to mother and mother to child.

It is with the view of reducing the embarrassments of maternity that the National Insurance Act provides maintenance for working women before, during and after their confinement. The allowance of 7s. 6d. per week to working women for four weeks before their confinement is proper and is merited; so, too, the 30s. to pay for maternity expenses. As this single benefit allowance was shown not to be enough, a second 30s. has been granted. To the poorer working classes maternity benefit under the Act must be of the greatest assistance, but all depends upon whether the money is well and wisely spent. The mother who has jeopardized her life that the nation shall be enriched deserves at this trying period all the care and consideration possible, but if, as sometimes happens, the insurance money is spent on such things as a gramophone, on a robe or a bonnet for the infant, or is spent in entertaining friends, clearly the object for which the maternity benefit was introduced is not being attained. Misapplication of benefits is, however, no condemnation of the Act, but is a reason for exercise of the greatest care in regard to the means whereby our socialistic legislation shall accomplish the object it has in view. In Scotland, I understand that the payment of maternity benefit has led to an increasing employment of the poorer types of midwife. It was the intention of the Act that skilled assistance should be obtained. In my own city the money given under the Act has led to greater employment of medical men, who for services rendered receive 15s or even 21s. On the other hand, it placed at first our maternity hospital at a disadvantage. Fewer patients have sought the assistance of the institution, a circumstance of some significance, since, if the declension goes on, fewer opportunities of learning practical midwifery will be afforded to medical students and nurses. This, however, is likely only to be temporary.

While the objects of recent industrial legislation are admittedly beneficent, not only has legislation added considerably to the cost of production, but it has been attended by results which do not make for improvement of the morale of the working classes. Intended solely to ameliorate the

conditions of those whose wage- earning capacity might be at once interrupted by accident and sickness and to hasten their recovery, events have shown how readily the working men and women of this country succumb to the influence of leisure, and the receipt of income without effort exerted personally to secure it. Sir John Collie is one of the strongest exponents of the prevalence of malingering in men and women after accident and sickness. One point I wish to draw attention to is the effect the excessive sick pay is having upon the funds of those friendly societies which have been for so long the pride of the working classes of this country, and their stay in time of trouble. The claims have now risen to such a height as to threaten several of them with bankruptcy. Taking some figures from my own district, I find that the average sick pay per member in one district before the National Insurance Act was 17s. 3d., in the first full year after the Act was in operation it was 25s. 10d., or an increase of 50 per cent. In another district the average sick-pay per member was 13s. 11d., and in the first full year after the Act it was 24s. 4½d., or an increase of 75 per cent. In yet another district the average sick pay per member was 11s. 1d.; last year it was 32s. 4d., or an increase of 191.72 per cent. Clearly there is something wrong. Two things strike one on inquiring into the matter, and the first is that the increased claims come from the younger members of the society. They are longer off work, also more frequently than formerly, and the second is that certificates are obtained too easily from medical men, not always after sufficient deliberation as to the fitness or unfitness of the member for work. To men who receive a larger weekly income when off ill than when at work, there is little inducement to return at the earliest opportunity to their occupation.

Mr. John Moore, of Newcastle-upon-Tyne, well-known in the friendly societies movement, tells me that the claims for sick pay for accidents alone amounts to 28 per cent. A few years ago, if 5 per cent. of the members claimed sick allowance, this was regarded as a heavy call, but to-day the numbers claiming are much larger. It will be interesting to see what will be the Report of the Commission which is at present sitting in regard to excessive claims. That the funds of several of the friendly societies are being depleted by this cause there can hardly be any doubt from the illustrations I have already given. The time has come when something will have to be done to put a stop to this practice. Towards this the medical profession must render all the assistance possible. Due care was apparently not exercised in the following cases which have been brought under my notice: For five weeks in succession the same medical practitioner gave certificates for five different diseases; for fourteen weeks one gave a certificate of incapacity for work owing to constipation; for eleven weeks a certificate of unfitness for work was given on account of diarrhoea. The wording of the certificate required by the Insurance Commissioners is definite enough. If friendly societies have a suspicion that they are being imposed upon by malingerers, and that the panel doctor is not careful enough in giving certificates, they ought to complain direct to the Local Insurance Authority. There ought to be medical referees appointed under the Insurance Act to visit, inspect, and to watch patients whose claims for sick pay are of too long duration.

[Note.—This paper was written before the present war was begun, and must be read in the light of the conditions which then existed.—T. O.]

THE PRINCIPLE OF THE GARY PLAN AND ITS APPLICATION TO NEW YORK*

By WM. G. WILCOX

Member of the Board of Education of New York City

IN discussing the Gary plan, it is important to distinguish between the principle of the Gary schools and the application of that principle to the public schools of New York. The principle is simple, the application complex and difficult; the principle hardly admits of an argument, the application is open to wide differences of opinions and methods.

The principle upon which the Gary plan is based is not economy, but diversified, interesting and practical instruction. Superintendent William Wirt would relieve the schoolroom of the monotony of book study alone by introducing Professor Dewey's philosophy of "learning by doing." Everyone must realize the importance and value of giving a child an opportunity to apply his knowledge as he acquires it, to use it in a practical way by doing actual tasks and producing definite results. Not only does such practical application help enormously to fix the knowledge in the child's mind, not only does it give the child a well-rounded instead of a one-sided development, but it adds zest and interest to the school work. The child goes to school because he wants to go rather than because he is compelled to go; the school work becomes a pleasure instead of a disagreeable task; and the joy of accomplishment, which is one of the greatest satisfactions in life, becomes at once a reward and an incentive.

With such a course in view, the curriculum of Gary schools includes shop work in great variety, from manual training to highly technical work; auditorium exercises in reading, speaking, drama, music, and lectures; science laboratories, playgrounds, swimming pools and school gardens. The school day is lengthened to six or seven hours, and these interesting activities are interwoven with the ordinary academic subjects, giving variety and added interest to the school work and helping in a very practical way to fit the children for useful and efficient citizenship.

In order to give these advantages to all of the pupils and not a favored few, as is often done in other schools, and in order to do this without prohibitive cost, Mr. Wirt evolved in Gary, Ind., a new plant for the efficient and economical use of the school building and equipment. Why, he says, should expensive workshops, auditoriums, gymnasiums and playgrounds be used only one, two or three hours a day? Why should classrooms stand vacant while their pupils are occupied in these other activities? Why not have all of these advantages used all day by alternate classes, so that the entire plant and equipment of the school may be employed to full capacity? On this theory it is no longer necessary to have a seat for every child, for the seats in the classrooms are used for different children and different classes, just as freely as are the seats in the auditorium. When one class leaves its classroom and goes to the gymnasium, workshops, playground or auditorium, another class takes its place in the classroom, and by such alternate use all departments of the school are occupied all the time.

This, then, is the principle of the Gary plan—the use of the academic classrooms by two alternate classes, and the introduction of other activities to occupy the children profitably while they are not in the classrooms and to give variety and added interest to their school life.

In the application of this principle there is room for wide variations. No other plan is so flexible and elastic. The longer school day leaves time for a wide range of the other activities without lessening the usual academic work, and these other activities may be varied according to the opportunities afforded by each school and its surroundings. Besides shop work, auditorium exercises, science laboratories, gymnasium, swimming pools and school gardens

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and playground activities. Mr. Wirt recommends supervised visits to public libraries, museums, art galleries, natural history exhibits, botanical gardens, public buildings, parks, bridges, etc.

In connection with such outside activities, Mr. Wirt also suggests that children on their way to or from school should stop for religious instruction at such church as their parents may elect. This, like all the other outside activities, is purely optional, and not in any way a vital part of the Gary plan. It is unfortunate that this suggestion should have assumed such unwarranted importance in the public mind and created the impression that it is a necessary part of the Gary plan. Many members of the New York Board of Education feel that this suggestion should at least be held in abeyance for the present and that such a departure should not be seriously considered until the main features of the plan have been successfully incorporated into the schools and assimilated into our educational system. If it should then be found that a large majority of parents desire to have their children stop for religious instruction at their own churches on their way to or from school, provision for this could readily be made, but in the meantime this feature of the Gary plan is not likely to be adopted in New York.

Introduction of the System Into New York Schools.

Although Mr. Wirt's system is so flexible and elastic, yet the introduction of this system into our New York schools is by no means a simple undertaking. There is not a school in the entire city which has sufficient room in its workshops, auditoriums, gymnasium and playground to meet Mr. Wirt's requirements, and it is not easy to increase these facilities, especially in congested districts. Each school presents a separate problem, and progress in adapting our present school buildings to this double session plan must necessarily be slow. There is no danger of any premature or wholesale change in our entire school system, such as some of Mr. Wirt's critics seem to fear. Such a thing would be a physical impossibility. The Gary plan requires that the aggregate capacity of the workshops, auditorium, gymnasium, playground, etc., shall be equal to the classroom capacity, in order that the classes may take turns in each. To make such changes in our New York schools as to comply with this requirement will not only necessitate careful study and plans for each school, but will require many months for execution of the work after the plans have been matured and prepared.

The plan has been tried in a crude form during the past year in Public School 45, Bronx, and Public School 89, Brooklyn. In neither of these schools have the alterations yet been made to properly fit it for the Gary plan, and the success which has been achieved in these two schools has been achieved in the face of great disadvantages. Twelve schools in the Bronx are now being altered to fit them for the Gary plan, and it is hoped that the new system may be installed there at the opening of the February term. This work will have required nearly a year from the date on which it was first proposed to try the Gary plan in these twelve schools. Beyond this it has been proposed that the Gary plan shall be used as a means of relieving "part time" in the schools where this situation now exists, and a study is now under way to determine the changes required to adapt these part time schools to the Gary plan. If this is undertaken, probably two years will be needed to complete the work in these part time schools alone, and in the meantime the results in the twelve Bronx schools will be known.

It should be remembered also that if the plan should not prove satisfactory in New York, no serious harm will have been done. The altered buildings will have been provided with better facilities in the way of playgrounds, workshops, auditoriums and gymnasiums, than they had before, all of which would be welcome additions to any school, and if they cannot be used satisfactorily under the double session plan, they certainly can be used to good advantage under the old regime.

Not Economy, but Improvement of the Schools, the Prime Object.

The operating cost of the Gary plan in our New York schools is still to be deter-

mined. The suggestion that the number of teachers can be reduced by ten per cent. is at least questionable. While one teacher may easily take charge of several classes in the auditorium or on the playground, this saving will be largely offset by the fact that more teachers will be needed in the workshops in proportion to the number of pupils than in the classrooms, and it will probably be found that the aggregate number of teachers required will not be less than under the present system. Moreover, the cost of material and the upkeep of equipment for the workshops will be a large item of expense if the system should be extensively introduced. Industrial training is always far more expensive than academic education, and the industrial training provided by the Gary plan is hardly likely to prove any exception in this respect. On the contrary it may be expected that the large economy in the cost of buildings secured by the double use of the classrooms will be in a measure offset by an increased cost of operation due to the expense of the industrial training. This is not a serious objection, however, for industrial training is now recognized as such an important part of public school education that the need and demand for it cannot be ignored, and under no other system can such industrial training be provided as economically as under a plan which uses the shops and equipment all day long for alternate classes.

The assertion frequently made that the Gary plan would result in larger schools and larger classes, is quite incorrect. On the contrary, while the number of classes will naturally be increased, the number of pupils in each class will not be increased; in fact, so far as the Gary plan has any effect on the size of the classes, it will decrease rather than increase them. Classes in Gary are considerably smaller than in New York, and after provision has been made in New York for giving full time to the pupils who are now on "part time," any further increase in the number of classes must obviously result in a decrease in the number of pupils in each class.

Most of the other objections voiced in public discussions and newspaper comments are aimed at minor details of administration which are not vital features of the plan and which may easily be modified as experience, or the judgment of our superintendents, may dictate.

In regard to the question whether under such a double session plan the children will receive as much academic instruction and will progress as fast in fundamental academic subjects as under the old plan, we have comparatively little evidence in New York as yet. The children in the Gary schools are said to be further advanced in academic subjects than New York children of the same age, and Mrs. Ritter, the principal of Public School No. 89, Brooklyn, says that the results of her tests of academic work since the new system was installed have been the best ever secured in her school. Further results in this direction will be awaited with interest. The time given to academic work is practically the same as under the old regime, and the results should certainly be no less satisfactory.

Teachers, like other workmen, are slow to change their methods; superintendents naturally look askance at any suggestions from an outsider, and the public is easily persuaded that any suggested economy means starving the schools and robbing the children. All of these factors should be considered in weighing any objection to the Gary plan. Especially should it be clearly understood that the prime object of the whole movement is not economy, but the improvement of our schools. Mayor Mitchel's and President Churchill's trip to Gary was not made for the purpose of saving money for the city of New York, but for the purpose of bringing to our New York children richer educational advantages. The economy of the plan is important because it makes possible such improvement in our schools as would otherwise be impossible. As the advantages of the plan are better understood, objections are likely to give way to such public demand for it as will surprise even its most enthusiastic advocates.

THE METHOD OF DEALING WITH TUBERCULOSIS IN THE PUBLIC SCHOOLS OF TORONTO

By F. S. MINNS, M.B., Toronto

MEDICAL inspection was begun in the Toronto public schools by the Board of Education early in 1910. Miss Lina L. Rogers, who while in New York developed the nursing side of medical inspection of public schools, was appointed superintendent of nurses. In the same year two medical inspectors and four nurses were appointed. The work of the medical inspectors and nurses disclosed such serious conditions of health that arrangements were undertaken by the Board to organize a system that would embrace all the school children of the city. In February, 1911, Dr. W. E. Struthers was appointed chief medical officer, and in March, eight assistant medical inspectors, one dental inspector, and thirteen nurses were added to the staff. One year later, February, 1912, six additional nurses, and in March ten additional medical inspectors were added; in March, 1913, three more medical inspectors and twelve nurses were appointed to complete the medical and nursing staff. Dental rooms were equipped in four schools, and four dental chairs were installed. In April, 1913, two dental surgeons were appointed, and later two more were added. This number of dentists has been increased to thirteen. The present total staff consists of a chief medical officer who gives his whole time to the department, twenty medical inspectors who give their mornings from 9 to 12 a.m., one of whom is a special examiner for tuberculosis, one chief dental officer and thirteen dental surgeons on part time, one superintendent of nurses and thirty-five nurses on whole time.

The city is now divided into districts with a medical inspector and two nurses in charge of each district. The medical inspector and the nurses of each district are expected to obtain an accurate knowledge of the prevalence of disease, sanitary conditions, home environment, and the number of indigent families in the district. The investigation and control of positive and suspect cases of tuberculosis among school children is being carried on with the assistance of the whole staff by one of the assistant medical inspectors specially qualified to undertake this work. The work is being developed in proportion to its importance and magnitude. All known positive cases are recorded and every exposed and suspect child is examined. The medical inspectors and nurses assist the special examiner by referring to him all exposure and suspect cases with a report of home conditions.

Extract from instructions to the staff regarding positive and suspect cases of tuberculosis.

"Cases naturally divide themselves into two classes: First, those without a history of exposure, and second, those with a history of exposure, that is, direct contact."

"All suspect cases without a history of exposure must first be examined by the school medical inspector, who, if he deems it necessary, will have a report sent in requesting an examination by the special examiner. Special consideration is to be given cases where an examination is requested by the parent."

All suspect cases with a history of exposure should be reported and a notification will be sent stating the manner in which the case is to be followed up and examined."

"Reports of all new cases of suspect tuberculosis, and all old cases not as yet recorded with colored stickers, should be sent in with your daily records, on the form provided. In the event of not having a form, give all the information which is thereon asked for: name of school, fam-

Pneumonia." A. R. Dichez, Bulletin, Verily name, address, names of all the children of all ages in the family, present whereabouts and condition, history of contact or exposure, agencies interested, and your signature."

"Cases, which are reported from the office of the chief medical officer and having a history of exposure, are to be examined as soon as possible by the special examiner or at a chest clinic at one of the hospitals or dispensaries mentioned in the notification."

"Cases which are examined by the special examiner or at a chest clinic will have the results of the examinations reported to the medical staff of the school as soon as possible. If the child is advised to discontinue attendance at school, the report will state this, and when advised to return to school after absence the child will be given a note to this effect."

"Cases reported by the special examiner, and no others, are to be recorded by the school medical inspector on the children's reference and physical record card with colored stickers. These stickers are used according to a code supplied."

"Under the heading on the report, 'agencies interested,' the following are the four principal ones: the parent or guardian, school, family physician, and any recognized charitable organization in the order in which they are to be considered."

"A record of every child examined to determine if tuberculous infection is present is kept in the office of the chief medical officer. In so far as possible the record of each family will be completed under the following heads:

"Date of the special examination.

"Names of all the children in the family.

"Ages of all the children.

"Family address.

"Name of the school or schools that the children attend.

"Brief history of the exposure: family, house, occupational, time, duration, degree.

"Result of the tuberculin test.

"Number of the X-ray when taken.

"Pathological lesions.

"Diagnosis, and by whom it was made.

"A note as to whether the case has been registered or reported to the Board of Health.

"A note stating by whom the child was referred for examination.

"A note of the child's present physical condition, and of the home and social conditions.

"A note of the recommendations re school and treatment.

"A note of the termination of attendance or treatment.

"The work of the department is carried on in conjunction with the work of the family physician, dentist, the chest clinics at the hospitals and dispensaries, the various missions, the social service organizations and the Board of Health. From these sources reports are received and acknowledged. The work is being developed and expanded in harmony with the existing organizations in order to reach the largest number of children possible, and as soon as there is reasonable ground for investigation to bring the timely aid which will ultimately be a great factor in lessening the prevalence of tuberculosis among school children.— conservatively estimated at twenty-five per cent.,— and as a direct consequence, among adults."

"Information may be obtained at any time by the members of the staff from these records."

"When the 'agency interested' is a physician the following form letter is sent to him and no further steps are taken in the case until a reply is received:"

Toronto.....

Dr.....

.....

Dear Doctor:

I have received a report that you are interested in the ..... family ..... St. The report states that the children attending school have been exposed to an infection with tubercle bacilli. We are desirous of gaining some definite knowledge regarding this infection, the control of which is one of the aims of medical inspection of public schools. We ask for your co-operation in one of three ways:

First: That you will send a certificate giving your examination findings, and state whether the case shows sufficient

signs and symptoms to make a clinical diagnosis in the case of,

..... age .....

..... age .....

Second: Or that you will express your willingness to have the children examined at school by the school special examiner, Dr. F. S. Minns, who will send you a report of his examination.

Third: Or that you will express your willingness that arrangements be made by the school nurse for an examination at a chest clinic at one of the hospitals.

Trusting to hear from you soon in regard to this matter, I remain,

Yours sincerely,

ALEX. MACKAY,

Chief Medical Officer.

This special work has been carried on for a year and a half. During this time a large number of letters have been written to the doctors. The response in almost every case has been prompt and in all cases a ready will has been shown, to assist in the work in every way. Every doctor has experienced the difficulty of getting permission to examine all exposure and suspect cases which he meets with in his private practice and he has been found to welcome the aid which will enable him to render service to those under his care.

Contagious diseases reported to the Municipal Board of Health from all sources are daily reported by the Board of Health to the chief medical officer. These cases are then reported by telephone, and by mail on special forms, to the principal and to the medical inspector of the school in the district in which the cases live. Cases of tuberculosis reported from the Board of Health, however, are for several reasons forwarded to the school medical inspector only. The school nurse then discovers whether there are any school children in the house with the case. If school children are found a complete record is sent in on the form provided, and where there are no school children a report to this effect is returned. The results of all examinations and the recommendations in each case made by the special examiner are reported to the Board of Health. In the case of tuberculous adults examined at the clinics at the Toronto General, St. Michael's and the Western Hospital, instructions are given to the patient that all the children exposed are to be brought to the chest clinic at the Hospital for Sick Children for examination irrespective of the presence or absence of symptoms of tuberculous infection. The results of the examinations and the recommendations made by the examiners at the hospital are reported to the medical staff of the school which the children attend. The Board of Health and the Board of Education nurses therefore receive the same information about the cases. This tends in a measure to prevent overlapping of medical, nursing, or relief work. Many new cases other than the above are continually being found by the nurses in their work in the school or while making visits to the homes, and these cases are reported to the special examiner.

The examinations made in the schools are arranged by the school nurse who gets a written consent from the parents for the examination. The nurse also endeavors to have the parent present. This is of considerable help in obtaining an accurate history and it insures the prompt carrying out of recommendations. A tuberculin test is made for each child examined—either a Von Pirquet or a Mantoux.

Cases examined are divided into three groups: positive, negative and cases of doubtful evidence. Cases in the third group are kept under observation and reexamined until placed in either the positive or negative group. The positive cases are subdivided into two groups—open and closed cases. The closed cases are those which have given positive tuberculin reactions with clinical evidences of tuberculosis.

This branch, as are all the branches of medical inspection work, is carried on to help each child of school age to attend school the largest number of days. This is possible for a healthy child only. The natural question which arises is: "What are we doing for the child who is found with signs and symptoms of tuberculosis?" The large majority of them are found to have one or more of the following more common pathological lesions,

viz.: sore eyes, defective teeth, discharging ears, enlarged cervical, mediastinal or bronchial glands, diseased bones, joints or skin, or some pulmonary involvement. Varying grades of anaemia and degrees of debility with frequently recurring colds are common conditions. In many cases treatment of the non-tuberculous conditions is the best treatment for the tuberculous. Parents are advised to take their children to the family dentist. If unable to afford to do so, the children are treated at one of the schools or municipal dental clinics. For ear, nose or throat treatment, the children are referred to the family physician, or to one of the hospitals. The correction of these defects in many cases is all that is necessary, with the addition of general measures to improve the general health. Tuberculin treatment is advised for suitable cases and is given by the family physician, or at the chest clinic at the Hospital for Sick Children. We endeavor to have open cases among adults removed from the child, or the child from the home. A large number of closed cases are sent to the Preventorium of the Daughters of the Empire for a period of one to four months. Their education is carried on by a teacher provided by the Board of Education while in this institution. The admissions to this institution are granted at the chest clinic at the Hospital for Sick Children. The child sent to the Preventorium is one who, after repeated examinations, is considered safe to mingle with other children and to be readmitted to school. During the six warmer months of the year, the Heather Club Chapter of the Daughters of the Empire with the co-operation of the Hospital for Sick Children are able to care for fifty children at the Lakeside Home. During this period the Board of Education also maintains two forest schools, one in Victoria Park, the owner, Mr. H. P. Schardt, having generously given the use of the grounds and buildings for the past two years, and one in High Park, a corner of which is being used with the consent of the city council. The attendance at each of the two forest schools averages one hundred. Inasmuch as the schools are intended for children physically sub-normal and presumably more susceptible to secondary infection, great care is exercised to select such cases only in which infectious pathological conditions are quiescent. Frequently it is necessary to cope with bad environment, poverty and ignorance, and here the agencies of pure air, selected diets and education, are the remedies par excellence. Open cases, pulmonary or otherwise, which are a menace to others are excluded from all schools, and the cases, adult or child, among the poor, are visited by the Board of Health nurses. In some instances the children are referred to the Queen Mary Hospital at Weston where there is accommodation for about eighty children.

This method of dealing with tuberculosis as it exists amongst the children in our public schools and the careful study and supervision of the individual child during school life will, it is hoped, produce good results. The statistics obtained, moreover, should be valuable to the medical profession in the general study and prevention of tuberculosis.

EUGENICS

By CASPAR L. REDFIELD.

Extracts from an address delivered in Chicago, December 10th, 1915, before the Eugenics Educational Association.

It has been said frequently that each man is the product of his environment. In a measure that is true, but no environment will make a Shakespeare out of an ordinary man. A great man is born, which means that he is the product of apartic ular kind of breeding. Similarly, the feeble-minded man is born, which also means that he is the product of a particular kind of breeding. The kinds of breeding which produce our great men and our feeble-minded men are as widely separated as are the men themselves. I cannot, in the time at my disposal, go into all of the intricacies by which different kinds of men are produced by breeding, but I can give some of the main essentials, and from these you can obtain a fairly clear understanding of what it is that leads toward improvement, and what it is that leads towards degeneracy.

They tell us that man and the other higher animals have evolved from lower forms of animals by selection, but those who make that statement overlook a very obvious absurdity in their claim. To have selection, parents must have offspring, and to have more selection the offspring must produce another generation, and these in turn another. Each generation gives the opportunity for selection, and the more generations the more selection. Anything which would reduce the number of generations in a given period of time would reduce the opportunities for selection to accomplish anything.

At some time in the past there was a common ancestor for man and the higher apes. There have been less generations, and consequently less selection, in the line leading from that common ancestor to man, than in the lines leading to the apes. Further back in the past there was a common ancestor for the higher apes and the lower monkeys. There have been less generations, and consequently less selection, in the lines leading to the higher apes than in the lines leading to the lower monkeys. Extend that examination to the different species of active animals and you will find that each advance from a lower to a higher stage involved the elimination of selection, and that the actual advance has been inversely proportional to the amount of selection. Carried to its logical conclusion this means that the greatest possible advance will occur when selection is reduced to zero.

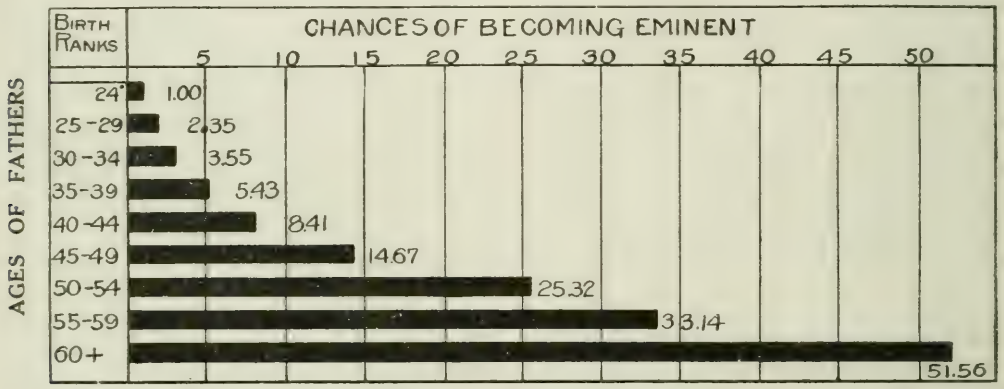
They tell us that acquired characters are not inherited, but I am telling you that the persons that make that statement have never investigated the matter and know nothing whatever about it. They simply repeat what they have been taught and they cling to the dogma because it agrees with their preconceived ideas. The theory that acquired characters are not inherited originated in a misconception of what an acquired character is, and in an experiment which is absurd on its face.

To acquire means to obtain by effort, by exertion, by the performance of work. An acquired character is one obtained by exercising an organ, or by the work performed by the organ. It consists of a physiological change occurring within the organ which is dynamic in character and is called dynamic development. The amount of an acquirement is proportional to the amount of work performed. A mentally active man has a better developed brain at the age of fifty than he had at the age of twenty, and the difference is due to the extra amount of mental work performed.

If an acquirement is to be inherited, the parent must make the acquirement first and get the offspring afterwards, not get the offspring first and make the acquirement afterwards. Of those who deny the inheritance of acquired characters, what one ever took this into consideration and compared the progeny of parents of different ages on the basis of acquirements? Not one. They have failed to take even the first step in such an investigation whereas they should carry such a one through three or four generations of ancestors.

Among certain eugenists there is a theory that it is impossible to produce an individual which is superior to anything which previously existed. That is, if some very superior individual exists it is because there was, somewhere in his ancestry, a similar superior individual. This theory amounts to a denial of evolution and a return to the Garden of Eden story with Adam and Eve originally created equal to any individual who has since existed.

It is not clear how widely extended this theory is, but it seems to be back of the proposition to sterilize a large part of the population. That proposition is a public confession, by those who make it, that they



Relative chances of becoming eminent, as measured by age of father at birth of son. From "Great Men," by Redfield.

know absolutely nothing about what causes improvement and what causes degeneracy. In their despair at seeing no way to improve the race other than that of killing off the inferior, they propose the killing process by indirection.

It seems never to have occurred to these gentlemen to write out the pedigree of some remarkable individual for three or four generations and then examine that pedigree for the purpose of learning if there was anything remarkable about the way he was produced. Wedded to a preconceived theory which they are anxious to support, they make statements without stopping to consider what those statements mean, when carried to their logical conclusion.

Let us consider the horses. A century ago there was no horse in the world capable of trotting a mile in three minutes. Now we have horses which have trotted a mile in two minutes. This is an absolute and very great advance in power made in the past 100 years. It has been said repeatedly that this improvement came about through selection, but the statement is not true and is made in complete ignorance of the facts. Selection has been used abundantly among horses, but that selection is not connected with the improvement which has taken place.

High speed at the trot is not a natural gait for horses. It is an artificial gait which never existed in any breed of horses until forced there by the art of man. Less than a century ago the only high speed gait for horses was the run, and when trotters were forced for speed they would break into a run. Now we have "born trotters" which will stick to the trot no matter how hard they are forced, and trotting speed approaches running speed. Here is a new character in the trotters of to-day.

To have selection a mare must have several foals. If she produced but one foal in her entire life, there can be no selection in her line. It is take that foal or none. Write out the pedigree of any 2.10 trotter, it matters not what one, and extend that pedigree to the time when there was no such thing in the world as a 2.30 trotter. In that pedigree there will be from 5 to 20 mares, no one of which ever had more than one foal in her life. The other mares, and the sires in the pedigrees, will be found, on investigation, to have produced less than the normal number of foals. Also, the lines of improvement to our high speed trotters average only seven generations to the century, while the normal number is ten generations. Actual improvement came in

those lines in which opportunity for selection was reduced to its lowest limit.

The same thing is true of intellectual power in man. Take any list of intellectually eminent men and you will find that they were sons of men much older than the average age of fathers when sons are born. A few will be found to be sons of comparatively young fathers, but push the investigation in those cases a little further and you will find that while it is possible to get an eminent man from a young father it is impossible to get one from a succession of young parents. A succession of young parents always results in the production of mental inferiority, and, if the parents are unusually young, in such a succession the product is weak mentality.

To maintain any group of animals on a level in its power capabilities there must be a certain amount of acquirement per generation before reproduction. If the amount of requirement is decreased there is a decline in power capabilities toward a lower corresponding level. If the acquirement is increased there is a rise toward a higher corresponding level. The age of parents at time of reproducing is one factor in measuring the amount of acquirement, and an investigation which did not consider this factor in at least three generations of ancestors would be superficial.

BOOK REVIEWS

PAINLESS CHILDBIRTH, EUTOCIA AND NITROUS OXID-OXYGEN ANALGESIA.—Forbes and Co., Chicago. Price $1.00.

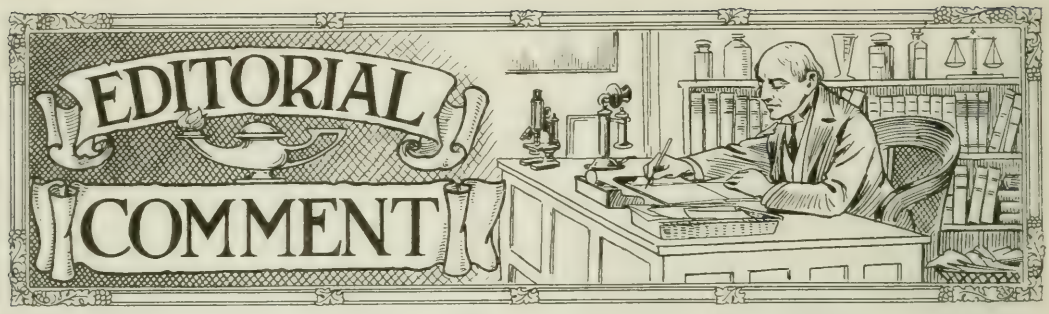
The doctor who is about to attend a maternity case should have both imagination and sympathy. His chief concern should be to treat his patient as he would be treated if he were in her place. Can we doubt that in such a case he would issue some sort of search-warrant for every item of reliable information on the subject of easy labor that could be found on the planet. This, then, is exactly the measure of his duty to the woman who asks him to attend her during her accouchment.

Sir James Y. Simpson states in his amusingly naive way, that the moral necessity that a woman should suffer anguish in childbirth passed with the advent of the Christian dispensation.

An analysis of recent statistics reveals little if any progress in recent times, in overcoming the dangers in the private practice of obstetrics. The subdual of pain in labor greatly diminishes the shock and reduces the death rate. These advantages are best secured, in the contention of our author (Dr. Carl Henry Davis, of Rush Medical Coll., Chicago), by the administration of nitrous oxid-oxygen. This agent, it is claimed, not only produces a perfect eutocia, but does it without unconsciousness, a feature appreciated by most intelligent mothers.

The extra cost is a factor to be reckoned and a cylinder has to be provided together with the apparatus for the administration of nitrous oxid. These matters make this agent more easily applicable in an institution where many cases are treated, but should not be prohibitive in private practice.

The fear amounting almost to panic with which many women approach the period of motherhood would be greatly abated or wholly removed by the assurance of effective eutocia during delivery. This book is wholesome, scientific and helpful. The author gives details and technic of administration. A. D. W.



The Women's Emergency Corps.

An important movement, having to do with the serious aspect of the times is the forming of an Emergency Corps of Women who have appointed Mrs. Archibald M. Huestis as their President. The object of the organization is to enable the members to aid recruiting, and is formed for patriotic service in connection with the war only, being in no way identified with any political or other objects. The members must be women who are doing, or are willing to do, patriotic work in some way for the Empire or the Allies. This is really another form of the registration of women available for active help that has been taken in England, and when we realize how many men will shortly be leaving Canada for active service, the necessity for women of all classes to come together and discuss matters and map out the plan of campaign to meet the situation can hardly be too strongly urged. There is much work waiting for women to do, not only in the much discussed matter of munitions, but in the every-day occupations left vacant by the men. We have not yet arrived at the stage, and let us hope it will not come, when women will be required for active service on the street cars, etc., but of indoor industries there will be many positions vacant soon which can be filled by intelligent, working women. Meetings have been called in Toronto, the first inaugural, the second to report progress, and it is very satisfactory to learn that representative women of our leading organizations, as well as many who are not so identified, but have the means and the leisure to help, are combining in a plan of action against times which may soon be upon us. The form for registration will be found at the Central Y. W. C. A. on McGill street, also at 1391 Bloor street east.

Over one hundred women have registered already, and inquiries are pouring in regarding the work. In many cases letters have been received from wives and sisters of soldiers, saying they are willing to do anything, but would prefer to work on munitions. The system of registration is not yet complete, but will be very shortly.

Health Insurance.

The Social Insurance Committee of the American Association for Labor Legislation, has issued the second edition of the "Standards and Tentative Draft of an Act," submitted for criticism and discussion. This committee was organized in December, 1912, and its aim has been to study conditions impartially, to investigate the operation of existing systems of insurance, to prepare carefully for needed legislation, and to stimulate intelligent discussion; and it is now hoped that a complete bill will be ready for introduction into the legislatures of 1916.

"Present interest in the problem of physical examination of employees without adequate provision for those suspended from work; the recognized success of workmens compensation or accident insurance laws in stimulating 'Safety First' movements; the beginning of compensation for strictly occupational diseases; the general awakening of public interest in the problems of factory and housing sanitation; and the appointment in California of a state commission to study social insurance, all make plans for health insurance most timely."

CANADIAN POETS

XXIIII

ALFRED GORDON

"Mr. Alfred Gordon, who for some years has been residing in Montreal, is a young English poet whose work reveals extraordinary genius and distinction. No praise can be too high for some of the poems in this most promising volume of initial verse. . . . The changes that have come over English poetry, largely on account of the war, are seen faithfully reflected in this book, and these changes make for greater manliness, greater nobility and greater austerity of thought. . . . . It is in the poems that make up the first section of this remarkable book that the young poet's genius shines out in all its mature and austere nobility. The 'Vision,' 'Easter Ode' and the 'Ode for Dominion Day,' with the poems 'England to France,' 'The Little Church,' 'At Evening Prayer' and 'On a Dead Modern Poet,' contain some of the finest and most exalted writing that has been done in the field of modern English poetry."—(Rev.) James B. Dollard, in Toronto Globe.

TO meet unexpectedly a new poet of originality and power, of whom I had not even heard before, and to feel for a few minutes the charm of his frank, sincere and warm-blooded personality, was my privilege in a Yonge Street bookstore, one fortunate day in January. The poet was Mr. Alfred Gordon of Montreal, and my attention had just been drawn by Mr. Albert Britnell to Father Dollard's appreciative critique, when in walked Mr. Gordon with a volume of his "Poems" under his arm. (Musson Book Company, Limited.)

The volume was intended for the book merchant, but it was quickly appropriated by myself, and the author pointedly asked if he desired to be known as an English or as a Canadian poet. The reply was quick and emphatic in favor of the latter.

As Mr. Gordon was born in London, England, in 1888, he is now in his 28th year. He was educated in a private school, and at Finbury Technical College, where

he studied for three years and graduated with a certificate in Mechanical Engineering. Shortly after graduation he was employed by the "Underfeed Stoker Company," and in connection with this company, first saw Canada in 1908, when he came out on the Allan Line steamer "Corinthian," assisting in boiler tests to determine the relative efficiency of mechanical stoking as against hand-firing.

This was the voyage on which the Corinthian came into collision with the "Malin Head," and Mr. Gordon was stranded with the rest for a fortnight in Levis. This misfortune was followed by another: through a misunderstanding the steamer continued homeward without him and he was left in a strange land, penniless and alone.

Eventually he got back to England, but not finding congenial employment of a permanent nature, he decided, in June, 1910, to cross the ocean again, this time to settle in Canada. He came first to Toronto where he says, "I was engaged in almost unbelievably humble work, before I went to Lachine and entered the employ of The Dominion Bridge Company as a structural draughtsman."

Mr. Gordon stuck to draughting, "eventually making good," and was with The St. Lawrence Bridge Company when the great war broke out, unsettling industrial conditions and causing loss of employment to himself and others.

The drudgery (to him) of a clerkship in an insurance office provided a livelihood for a time, when he resigned to become Managing Editor of "The Spectator & Canadian Bookman," a new journalistic venture with headquarters in Montreal. In this city Mr. Gordon resides with his mother, to whose devotion and guidance he ascribes whatever attainment and success he has achieved.

DEDICATION

There was a time in boyhood, ere life ceased
To hold a miracle in every hour,
We saw a City shining in the East
That drew us towards it with a magic power.

I saw its spires in glittering array,
And called you to me, while, with shaded sight,
We looked and wondered how far off it lay,
And looked again along the roadway white.

I told you how right fair it was, and you,
Half-willing only, placed your hand in mine—
'T was but a mirage—aye, that all men knew,
But yet none mortal ever might divine.

And now the whole width of the Atlantic main
Divides the fortune of our temporal ways;
Perhaps we shall not meet on earth again
Except in memories of those by-gone days.

With strengthened vision you, maybe, have wrought
The consummation of that early dream,
Whilst I, too certain in Youth's pride, am brought
To cry the passing of its transient gleam.

Indeed, I think now that I did not see
The Eternal City of man's endless quest—
'T was Art not Life, that first awakened me,
Though, once awakened, I might never rest.

I saw the beauty, first, of Form alone;
To Knowledge, not to Wisdom, I aspired:
But hardly even God to Youth makes known
The things "more excellent" of Him required.

Who were the captains of my early song?
Swinburne and Dowson, Symons, Oscar Wilde:
Sensuous or violent, but seldom strong;
By them unconsciously I was beguiled.

Yet it was natural I should mistake
Their loves and lutes and towers of ivory
For that Adventure which the soul must make
Or else for ever ignominious be.

And, at the root, the difference is not great;
'T is but a strangeness more profound I seek:
The Boy's romance, to him, is filled with Fate,
Although his elders of it lightly speak.

So here, inversely, and from time to time,
Is told, dear friend, my pilgrimage since then—
From decoration and embroidered rhyme
To some poor reading of the minds of men.
I sometimes ponder if each soul that wins
An entrance to the far-off gates thereof,
May make atonement for a spirit's sins,
If once it dwelt with it, on earth, in love.

I wonder if those hours, though so long past,
When we in word and deed went hand in hand,
Will be a sacrament, and, at the last,
Together in that City we shall stand?

EASTER ODE, 1915

O Spring! To whom the Poets of all time
Have made sweet rhyme;
And unto Lovers, above all, most dear!
How shall they hymn thee in this latter year,
When Death, not Life, doth ripen to his prime?

What pulse shall quicken, or what eye grow bright,
With Love's delight,
Now sleepeth not the bridegroom with the bride?
What flowers shall cover, or what grasses hide
The miles of mounds that thrust upon our sight?

April's light showers, that made the sun more sweet,
Seem now to beat
In constant boding of the nations' tears:
Across the pastures, to each mother's ears,
The lambs and ewes more piteously bleat.

The fledglings fallen from the nest awake,
In hearts that break,
A new compassion for their fluttering:
The brown, soft eyes of every furry thing
Seem doubly tender for our sorrow's sake.

Pity, through Terror, hath touched every heart;
None stand apart,
In blunted sense or in the spirit's pride:
The base and gross are cleansed and purified;
Life to the lettered grows more great than Art.

Terror, of Tragedy the nether pole,
Hath purged the soul;
The priest and prophet cry not now alone:
Blood and burnt-offerings, that we thought outgrown,
Now seem the centre of a cosmic whole.

On every hill, blood stains the melting snow,
The rivers flow
Crimson and swollen with the unburied dead;
Through vale and meadow like a silver thread
The streams wind not as but a year ago.

The stolid ploughman as a rite or prayer
Doth drive his share,
But Plague and Famine in the furrows stalk;
While, in the cities, our distracted talk
Betrays the fever of a constant care.

Nay! It is Autumn, surely, and not Spring,
That we should sing?
Autumn whose breath makes every leaf forlorn!
"Put in thy sickle on the standing corn!
The sheaves are ready for the garnering!"

But, like a trumpet, even as we doubt,
A Voice rings out
Above the shrill of the increasing strife:
Lo, it is Easter! And there dawns such life,
The very stars, in exultation, shout!

Before the glory of the seraphim
Earth's hosts grow dim;
The Rights of Nations and man's empires fade:
No more from God each seeks peculiar aid;
In equal penitence all turn to Him.

And though the quickening of the countless slain
We plead in vain;
Life, and not Death, shall reap, this harvest-tide:
Love in the Pit shall seal the Prince of Pride;
The Peace we mocked, in triumph shall obtain.

Caught up in vision, lo, I dare to pen
Patmos' again!
"Behold! The kingdoms of this world shall be
Those of our Lord, and of His Christ; and He

Shall reign for ever and for evermore."
Amen.

ENGLAND TO FRANCE
August 4th, 1915

O France! On this dire anniversary
After what fashion should we sing to thee?
Or should we sing?
Or if one sang in such an hour, should we?
For, in times past, how often have we said
But vanity and folly crowned thy head,
And that in thee there was no stable thing?

Yet thou didst judge us with like jaundiced eyes—
A people gloomy as their own grey skies,
Whom neither love
Nor hate nor fear nor death might agonise:
That never knew a lifetime in one kiss;
Deaf to all rhapsody of woe or bliss,
Of Hell beneath them, or of Heaven above.

For perfidy we were to thee a name,
As thou to us for all licentious shame,
Until that day
All such loose folly was consumed with flame:
But now, howe'er the tide of battle run,
This year for us an era has begun
Which shall not soon or lightly pass away.

As lovers' quarrels now stand forth revealed
The petty wrangles that we kept unhealed
In jealous pride,
But now for ever and for ever sealed:
Only the wasted past shall we now rue,
The love unowned which yet at heart we knew,
And which from now shall never be denied.

As Sidney hailed thee in thy fame gone by,
"France, that sweet enemy!" So now we cry,
"France, that sweet friend!"
Yet, as of old, a Queen; with fame more high,
Sweet friend for ever, yet on this high day
A Queen in meet and glorious array
To whom in homage all the nations bend.

O France! Fair land of sunlight and the vine,
To whom illusion and romance were wine,
By what new light,
High o'er the conflict, doth thy spirit shine?
We have grown old and outlived dangerous dreams,
While through thy veins the fire of youth yet streams—
How shall *we* praise thy calm restraint aright?

Girt by the sea, howe'er so greatly pressed,
Always secure we had one place of rest,
And well we doubt
If we or any had endured thy test:
Wherefore we praise thee as none else before,
And in our hearts a memory of thee store
That shall not fade till all the stars die out.

For thou not merely hast survived thine hour,
Not, in thy trial, but preserved thy power;
But hast come forth
From thine affliction with yet richer dower:
A strange, new strength thy spirit doth endue,
A strength unknown of nations hitherto—
Far from the fury of this day of wrath.

As of fair women purged by bitter ruth,
Who have outlived the passions of their youth
And find at length
Peace in the quiet sanctuaries of truth;
Who smile where once they laughed, and yet are seen
More beautiful than they have ever been
In any triumph of their former strength.

Who walk in ways so gracious and so still,
Whose mien so calm a majesty doth fill,
Their purpose seems
Not theirs, but part of the eternal will:
So thou, O France, before the world dost fight
Not for thyself alone, but that great light
In which the very flood of freedom streams.

That light indeed which always lighted thee,
Howe'er disguised or fitful it might be—
Aye, even when
The holiest things thou mad'st but mockery:
Falsehood for truth, in error, thou hast deemed,
But never the idea of truth blasphemed—
So that great light thou guardest once again.

There is no God, thou saidst, but never said
Thyself wast God, and power unlimited
Thy right divine,
That all the earth should tremble at thy tread:

Aye, with what laughter, sweetly terrible,
Voltaire had hurled this Anti-Christ to Hell,
Cleaving him shrewdly to the very chine.

How thine immortal soul in him had flamed
To see thy temples ruined and defamed;
What thing more crude
The lightning laughter of his scorn had claimed?
For though destruction overtake thy fanes,
Yet indestructible the faith remains,
Purged of its dross, and strengthened and renewed.

Barbarian hordes that have but one recourse,
How shall thy foes, O France, assail the source
Of that hid life,
Who think to slay the spirit by brute force?
Upon the glory of the past they war,
But 't is the future that thou fightest for,
And that great glory which shall crown thy strife.

For lo! Whatever wounds are this day thine,
More clear through suffering doth thy spirit shine,
Made once again
For all mankind a standard and a sign:
Aye, as of old, o'er Terror and o'er Wrath,
The clarion cry of Liberty goes forth,
And, as of old, it doth not cry in vain!

THE LITTLE CHURCH

A Church there is whose members' love
  Transcends all other known to man;
More deep than bond of blood could move,
  Or cry of rights since strife began;
Set fast upon the world's heart's need,
And stronger than the strongest creed.

Its inmost spirit steals away,
  And in calm, cloistral shadow hides;
Its lovers shun the common day,
  Their temples build where peace abides;
And o'er dim streets of dreamy ways
Their fragile spires and turrets raise.

Its habitation is too shy
  To bear the burden of a name.
But those that hear the human cry
  Behold it as in words of flame:
The Little Church of those that fall,
And, seven times stumbling, rise withal.

The Little Church—though soon or late
  To every earnest heart 't is known—
To each a shrine so intimate
  He seems to workship there alone:
Though now and then, without a sound
The ghostly elements pass round.

There, banned from Christ's Church Visible
  By deep misgiving of their worth,
His unacknowledged followers dwell,
  And wait His Kingdom upon earth:
Whose secret acts of love alone
Their spiritual Head make known.

And, more than these, His seeming foes,
  That imprecate His Church, but yet
The heart of whose indictment shows
  It is to Him they owe their debt:
There dwell, in one communion blent,
Both furtive and implied assent.

For those that most His Church arraign,
  Beneath the sharp and bitter fruit
Sigh wistfully to find how vain
  The dust and ashes of its fruit;
And, in some silent interim,
Despite themselves, draw nigh to Him.

And there they dwell that know no creed
  Save service of a narrow truth,
That ill but yet sincerely read
  The riddled scripture of their youth:
Unwitting, ere earth's order stood
The Word was, and the Word was God!

Its gates are catholic and wide
  To all that seek its bread and wine;
With equal yoke there, side by side,
  Kneel faith and doubt before its shrine;
Yet none such strait exaction lays
As this on those that serve its ways.

Without its walls no Godhead waits
  To portion out the fruit of sin.
Reproach more poignant vindicates
  The judgment of the law within;
The gnawing pang that none can dull,
No sleep allay, no time annul.

It is so like a vague desire,
  A baffling dream of hopes and fears,
One may have breathed its heavenly fire,
Yet feed on sorrow all the years.
At times such horrid shapes infest
The holy gloom that shrouds its rest.

Its lovers have no marching-songs,
  Or stately chant of fruitless prayers;
Their cup is overfilled with wrongs,
  And feast for fast is never theirs:

Cast out before the great world's eyes,
With unquenched hope they still arise.

Red drops of blood mark all the way,
Where sharp stones cut the journeying feet,
And yet no pilgrims turn or stay,
But falter on in weary heat,
With gladness for a hand's space won
Before the sun's full course is run.

No crown of glory and no palm
They look for when the end shall come,
Yet strive, spite many an inward qualm,
Until the soul itself grows dumb:
Grows dumb, grows dumb, but never dies—
In this their only guerdon lies.

Life's fixed antinomy doth chill
The passion of their endless quest;
No words of benediction still
Their mortal yearning and unrest;
A rolling Juggernaut, the brain
Moves on till all men's hearts are slain.

Within, the timeworn spirit sinks;
Remorse and sin divide their days;
While Reason, like a glacial sphinx,
With icy stare each longing slays.
Yet onward with blind steps they reel:
They felt, they felt—and still they feel.

Crying with all the ages' need,
To Galilee for peace they turn;
But Godhead there by man decreed
Confronts them, and they still must yearn:
Nor Force nor Will can cheat the toll
That Truth exacts from every soul.

Untroubled, none His face may see,
Marred by all lusts that are and were;
And all the sins that are to be
Engrave their fascination there:
Swept by that agony of love,
They would, but cannot to Him move.

Thus over them is hung no Cross,
Or Christ with crown of twisted thorn,
But there is crying of great loss,
And hungering after bliss forlorn.
What sightless wrath hath led us on
To spit on God's own dearest Son?

Why have we laid on Him the life
Of those that name Him, knowing not?
Why have we charged him with man's strife?
Why have we added to His lot?
Lo, we have stumbled, cursing Christ,
Who was for these things sacrificed.

With molten hate of hollow creeds
We have rebelled against—what things?
With blind, stark rage, for blinder needs,
We have cursed gods and cast down kings:
Filled full of scorn of all men's lands,
What better guerdon hold our hands?

We have pulled down and builded none;
Cursed deep and have not ever blessed;
And what thing is there we have done?
And what have we achieved of rest?
We have shut out both Wrong and Right,
And murdered Anarchy and Light!

We have reached over truth, and lied;
Blasphemed, like drunken men; set free
Revolt, a black, malignant tide,
To mingle with a crimson sea:
With heresy more mad than faith,
We have betrayed Love's soul to death!

Love's hands we pierced with nails, Love's feet;
Crowned Love with thorns, and pierced Love's side,
Let passion burn us up with heat,
To wake and find Love crucified—
O Love arise lest our despair
Ring madly laughing through the air!

For quick redemption of the race
We rose and brake the rod and creed,
We blindly smote Thee on the face,
The Saviour of all souls that bleed:
And what word dare we raise to Thee
But Thy first cry from Calvary?

O deathless face, twice strong with death,
Death conquers us no more than Thee!
Hear now what our repentance saith,
Assuage our soul's sharp agony!
Let now Thy Spirit in us brood,
Now stay our heart's red tide of blood!

To half a word we have been true,
For that vain half Thy vengeance spare;
Our hearts are filled with bitter rue,
Spurn not our broken, contrite prayer.
Yea! Though we pierced Thy sacred side,
There let our griefs and wild words hide!

There heal our hurts' continual fire,
From fruitless strife our spirits fold;
Let only Love be our desire
Until our tale of days is told:
Thy peace be ours, O thorn-crowned King!
Thy sacred strife, without our sting!

Art and Artists in Canada

By KATHERINE HALE

ECHOES from the Mendelssohn Choir concerts still linger, though the first of February is long past. Who will forget the first dreamy notes of the Russian Symphony Orchestra as it seemed to drift into the overture to Khovanstchina, by the Russian composer Moussorgsky, who, although dead for over thirty years is just beginning to be known outside his native land. A description of this overture, written by Mr. Altschuler, the conductor of the orchestra, describes the music better than I could do. He says: "We seem to hear the languorous mood of the earth in its struggle to shake off the yoke of slumber. The clarinet suggests the crowing of the cock. The first rays of the sun. Indistinct chiming in the convents. First signs of life awakening on earth. Flocks of birds soaring skyward. Earth awakens to full activity. Tolling of bells. Songs of boatmen on the Moscow river—gradually dying away. Full day."

There followed two Caucasian sketches by Mikhail Ippolitoff-Ivanoff, who is the conductor of the Court Opera at Petrograd. A "March of the Sardar" and "In the Aul," a beautiful thing in which the languor and sultriness of an evening in the mountains have been caught very truly. The solos for muted viola and English horn have been likened to "answering calls from one rock or cliff dwelling to another."

Following this came the ethereal tones of the Mendelssohn Choir in the Cherubim Song by Rachmaninoff, from the Russian liturgy, a piece which this choir has made regularly its own. The first evening of the series was devoted almost entirely to Russian music, and left the sense of mystery, sadness, wild joy and haunting color that the work of these wonderful people always calls forth. Novelists, composers, musicians and dancers they leave us with tingling nerves and the sense of another open door heading into vast and for the most part untried spaces of art.

And mingling with this are the poignant memories of The Children's Crusade," the lovely legend, or rather historic fact embroidered into a sort of legend, of the going forth of thousands of children led by a blind boy to rescue the tomb of Christ from unbelievers at the time of the Crusades. The music by Gabriel Pierne is French in the best sense of the word, containing dramatic fervor, clarity, freshness and a sense of instant and unaffected effect. Surely no one else could write so well for children's voices nor could a lovelier choir be imagined than that brought together and trained by Mr. A. L. E. Davies and conducted by Dr. Vogt. The narrative effect was heightened by the glorious orchestration and the story was compelling from start to finish; the going out of the children, the tenderness and anguish of the mothers, the storm at sea, the calls of the sailors, the wonderful ocean music, and finally the appearance of Christ. It was a great picture skilfully drawn. The writer has spoken much of the "crusade" before, for this is the third performance in Toronto, but the work would stand an annual hearing.

* * * *

Percy Grainger, the Australian pianist and composer, is an excellent example of unqualified success. He has a good deal of originality in adapting and concertizing folk songs, and his English Morris Dance called "Shepherd's Hey," collected by Cecil J. Sharpe, is typical of his free and jocular touch. After acquaintance with the poetic and somewhat feminine portraits of Mr. Grainger with which his advance agent flooded Toronto, and the tremendously eulogistic notices of critics, it was rather a surprise to meet a short, stocky young man who gave the impression of pleasant candor, business ability and great physical strength. In his playing Mr. Grainger was a curious study. His programme began with an Organ Prelude and Fugue in D Major

(arranged for pianoforte) by Bach-Busoni, which is masterly, smooth-flowing, producing a sense of poise and security in the mind of the listener. "In Ola Valley" and "Rotnamsknutt," Norwegian folk songs arranged by Greig, there was real poetry, while the "Watersprite," by Ravel, was a dream of beauty. It was full of magic, and the strange necromancy of color, skilfully wrought on color, but all in the faintest shades of greens and blues; the greens and blues of water, tossed and eddied by the play of a sprite laughing in his own domains. It was sheer witchery and the pianist seemed to be weaving it for us in a way deliciously new and fresh. Then after two Debussy pieces, indifferently done, the programme seemed to change and the rest was dull and commonplace. The Prelude Aria and Finale of Cesar Franck was interminable and platitudinous, and Mr. Grainger's little dance. "Mock Morris", and "Colonial Song," the latter a tone poem expressive of the scenery of his native country, while whole-hearted and pretty, seemed very obvious with the echoes of the earlier evening still in one's mind. Had the programme been reversed it would have been more effective. Still, we shall not forget Mr. Grainger and his happy spirit and gay, rustic dances. Other references have been made in these columns as to his research work in folk-song and its importance to musical literature. The fact that so many of Mr. Grainger's pieces are on the lists of piano teachers shows that much interest has already been developed along these lines.

* * * *

Talking of pianist-composers, we have in Toronto an acquisition to our musical world in the person of Mr. Paul Wells, a young American whom Dr. Vogt met in Europe some three years ago and persuaded to join the staff of the Conservatory of Music. A pupil of eminent American and European teachers, notably Joseph Lhevinne and Leopold Godowski, Mr. Wells may be said to have freed himself from any particular "school" of piano and to play so that one feels the force of a master at his chosen instrument. While his interpretive powers are marked, it is as a composer that I am most interested in Mr. Wells. There are many interpreters and so few composers. As yet the art is in its infancy in Canada. It enters not into our thought, even in connection with education. and where any one shows a natural inclination to express musical ideas we suggest to ourselves, amazedly, that he or she must be that uncanny thing, a "genius."

At a private hearing, and again in public Mr. Wells has this month played his latest composition, a sonata in three movements, which is an exceedingly fine and in places inspired piece of work. The sonata is really a very old musical form, but its progress has tended towards emancipation from originating influences, and it was Beethoven who finally infused into

PAUL WELLS

it the spirit of human emotion. Under him the different movements of the sonata became part of a sentient whole—like verses of a living song.

In his new work Mr. Wells has poured into the old mould music which is modern, free as air and yet reflective, orthodox but not conventional, passionate yet also luminous, of that peaceful beauty which carries one far from the dust of life on the magic carpet of true art. It is well for Toronto to have as inmate so sincere an artist and talented a composer as Mr. Wells. His Recitals, of which the last was on February 21st in Foresters' Hall, are a genuine delight to music lovers and an education to students.

* * * *

The coming of Madame Edvina, the greatest singer whom Canada has yet produced, was the musical event of the

month. Her appearance in Massey Hall on Feb. 17th in concert, when she was ably assisted by Mr. Hugh Allen, baritone, and Sascha Jacobson, violinist, was made possible by the fact that there is no opera season in London this year, and so for the first time the singer is touring her native land. Edvina is a brilliant example of the prima donna, who, much later in life than most women, began to study for opera. In fact it was after her marriage that she made her first serious appearance. This most charming of present-day sopranos was born in Montreal and was a resident of Vancouver at the time of her marriage to the Hon. Cecil Edwardes. After taking up her residence abroad, Mrs. Edwardes studied for some time with the renowned Jean de Reszke in Paris, and as Madame Louise Edvina she made her debut at the Royal Opera, Covent Garden, London, in the summer of 1909, singing Marguerite in "Faust." The event took on extraordinary interest, Queen Alexandra, who occupied the Royal box, being one of the most interested spectators.

The triumph of the young artist was so remarkable that immediately she was accorded a foremost place, not only as a member of the Covent Garden company, but among the greatest singers of the day. It was noted at once that Madame Edvina had been endowed with rare histrionic gifts as well as an exceptionally beautiful voice, and so during the five successive seasons that she has sung at Covent Garden, she has been entrusted with the creation of the leading part in almost every important novelty added to the repertoire. Among them might be mentioned the title roles in "Thais," "Louise," "DuBarry," and "Francesca da Rimini," Maliella in "The Jewels of the Madonna," and Fiora in "L'Amore dei Tre Re." In addition she has given vividly fresh conceptions of such widely differing parts as Melisande in "Pelleas et Melisande," Desdemona in "Othello," Antonia in "Les Contes d'Hoffmann," and the name parts in "Tosca," "Manon" and "Madame Butterfly." Few careers have been so conspicuously brilliant from their inception, nor can another artist be readily called to mind, who has accomplished so much within so brief a period.

With Parisian opera goers, Madame Edvina knows equal favor. At the Opera-Comique, where she has sung with frequency, her Louise has become the standard interpretation of the role and the composer Charpentier has styled her "the ideal Louise." At the Theatre des Champs Elysees, she opened the Anglo-American season of the Covent Garden and Boston Opera Companies in the spring of 1914 by singing Fiora in the first performance of "L'Amore dei Tre Re" given in Europe, outside of Milan.

In America Edvina has sung with the Boston and the Chicago Opera Companies and now with the Metropolitan of New York.

And what of the secret that has made this singer among thousands of others so bright and particular a star? Just, I think, that she is a star—the quality goes with her; there is something luminous, bright and penetrating about her voice which one critic has called "a kind of virginal ecstacy" that develops, of course through patient work but is none the less inherently a part of the personality of the artist. This tone quality is a subtle thing. It is in its essence, I suppose, the very color of the spirit, and yet the only direct medium for the final expression of one's art. Range, power, facility and technique—these are ordinary attainments, a perfect tone in any art is the last victory, and this, in large measure, Madam Edvina possesses. Her concert programme included French and English songs, and the aria from "Louise," "Dupuis de Jour," which she has made particularly her own, was exquisitely sung, also two duets with Mr. Allen, "La ci darem" from Don Giovanni (Mozart) and the famous duet from "Veronique" by Messager.

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In the great spectacular performance of "The Dynasts," by Thomas Hardy, presented by Toronto amateurs in the Royal Alexandra Theatre during the third week of February under the immediate direction of Mr. Frank Lascelles, certain figures stand out so clear cut that the intervals between seem to be lost sight of as the mind reviews the whole. In a pageant which contains twenty-four scenes and

two hundred performers there is necessarily a good deal to review. Many of the scenes have to do with the comments of Wessex peasants on the possible invasion of England by "Boney," the feared and dreaded, and focusing in a way these rambling comments come, every few scenes, some decisive episodes such as the death of Nelson, admirably played by Prof. E. T. Owen, of Toronto, scenes in which the character of Napoleon was very cleverly sustained by Mr. George Dixon and that of the Duke of Wellington by the well known actor, Mr. Farnham Barton. The drama leads up to the eve of Waterloo and the famous ball-room scene in Brussels. Then occurs by all means the most poignant bit of acting in the play, albeit no historic personage occurs therein. It is the morning after the ball-room scene and we see the windows of neighboring houses in the main street of Brussels. A young girl and her mother look out upon the columns of British soldiers marching past southward out of the city. The dialogue which ensues is hardly so much dialogue as a bit of commentary between youth and age, uttered in little fragments, exclamations, ejaculations, the girl looking only for the face of her lover among the soldiers passing by, the lover whom before the ball last evening she had not even known, and the mother assuring her that her emotion is very foolish, that this is war and that her tears really "cannot make any difference." "Never mind, my dear," she says; "Cheer them on! They are brave men. Women who love soldiers must never cry!"—or words to that effect. And there was that in the portrayal of the scene by the mother, Mrs. Forsyth Grant, who has long been known as one of the cleverest amateur actresses in Toronto, and Miss Bryan, the young girl, which made this one little scene stand out as more vivid, human, and telling than any other in the entire production.

The whole performance was knit together by the reader, Mr. Frank Lascelles, whose glorious voice adds majesty to the lines of Thomas Hardy, and by the comments of the chorus: Strophe, Miss J. J. Stewart, and Antistrophe, Miss Bauchope.

PUBLIC WELFARE

Out of the Deeps

Stirring times are upon us. On three continents, on land and sea, Saxon and Teuton, Gaul and Slav, Turk and Mongolian are thundering fateful war. The greatness of the past is struggling with the on-marching democracy of the future, the "divine right of kings," long dishonored and trailed in the dust, rising up once more to confront with desperate defiance the mightier and diviner rights of man. The dragon has a new name, "the superman," but it is the same dragon, the kings and plutocrats who love not any as they love themselves.

This war is one from which whatever ships may sink or forts may fall, man shall rise superior to tyranny. To this end he must have qualities of superiority. In war or peace, to hate is silly. Within five years the best newspapers of the Empire will be advising us to cultivate friendly feelings toward the Teuton. Not the Teuton of to-day, but of to-morrow. He will be different, for he will be undeceived. We shall have our German Bothas then as we have our South African now.

Meanwhile, it is war-time and it is our present duty faithfully to fight against despotism, but to fight without hate in our hearts. It is our duty to contend for those things which make for peace, prosperity and power, not merely for Britain, not for the Allies only, but for humanity.

When the blood of our deathless heroes
  Has filtered away in the sand,
And the kindly earth to her aching breast
Has folded them all in passionless rest
  And there's weeping in every land,
Shall a wild fool-world, blindly reeling,
  Go blundering on thru the mist,
And staggering down on the roads of time
O'erwhelming the music of heaven sublime
With the threat of a mailèd fist?

When mothers, war-widowed, are wailing
  With a deep despair in their tears,
Shall we see the thing we have fondly nursed,
Ambition, the dragon-monster accursed,
  Still shaking his brand down the years?
Let war-drums be broken forever,
  The bannered millions dismissed,
Let all the lands of the earth unite
To drive from the earth with invincible light
  The threat of the mailèd fist.

—Albert D. Watson.

MATTERS MILITARY

NO. 2 CANADIAN STATIONARY HOSPITAL, LA TOUQUET, FRANCE

Extracts from a letter from Miss Attrell, who went to the front with the first contingent from Winnipeg, Man.

We have a number of Canadians in our hospital, in fact we are very busy. Some days over three hundred may be admitted and almost the same number transferred to hospitals further south or to the hospital ships for England, and discharged to the base for light duty. There are Canadians in many of the other hospitals in and near Boulogne. Each day we receive word of someone, a friend or relative of one or more of the Sisters, either wounded or killed. Perhaps the routine of admitting and discharging patients would be of interest to you, but before starting I shall give you a copy of a clipping I obtained from a Pacific Coast newspaper. Praise of the arrangements at the Canadian hospital at Le Touquet and of the personnel continued to come from all sides. Mr. Sidney Low gives the following interesting account: The Canadian Hospital is a fine example of overseas enterprise. It brought everything along with it from the Dominion—medical officers, nursing staff and orderlies, bedsteads, stores and surgical instruments. The doctors are commissioned officers of the Canadian militia, so are the nursing Sisters. These ladies wear the rank badges of a lieutenant on their shoulder straps and are therefore the military superiors of the non-coms and privates, and entitled to give them orders. I believe Canada is the only country which awards commissions to its army nurses. The system is said to work well and to conduce both to the professional zeal of the nursing staff and to the general discipline. Certainly nothing can exceed the pride of these Canadians of both sexes in their work, or the air of business-like effectiveness which pervades this colony from the West up here in Picardy. Canada is heart and soul in the war, and when the Canadian wounded soldier gets into one of the wards labeled "Ontario" or "Quebec" or "Manitoba" he will hear the accents of his own country. Meanwhile the smiling nurses and the keen, capable doctors are treating injured Britons and Scots and occasionally French and Belgians. Though this is an ideal locality for the establishment of hospitals, and no doubt in the near future is to be a great hospital centre, it is not the near front, therefore a few hours' journey by train and less by motor from the firing lines, we receive our patients directly from the first aid station and the trenches.

Each engagement brings us a large share of broken and tortured humanity. The effects of the actions at Neuve Chapelle and La Bassee were terrible. Many had lain for hours on a shell-swept battlefield. Gas gangrene (malignant oedema), that dreadful condition of wounds caused by the use of phosphorus in the explosions, had begun in many bases. It usually proves fatal, but not many cases have we lost, the treatment being fresh air and almost continuous irrigation.

Would have liked to see the result of oxygen injected by a nozzle attached to the tank into the sinuses; believe that is the method of treatment in England. Wounds, no matter how extensive, do marvelously well. The extremely ill re-

cover wonderfully, a few hours bringing a great change for the better. The health-giving environment of pine forest and wind-swept dunes and not-far-distant sea, with plenty of sunshine and pure, sweet water give the best assistance to medical and surgical skill to bring back the shattered bodies of our men to strength and activity. We notice such a difference between those admitted in the early part of the winter and those admitted this year. They say they get plenty of good nourishing food in variety. The service of the A. S. C. has been excellent. No wonder that here, on the margin of the Hardilot, where Napoleon encamped a hundred years ago with the army with which he intended to invade England, you find French, English, Indian, and Canadian hospitals, not one but many. The British army is the healthiest that ever took the field. I trust this statement will stand the test of the warmer weather and unsanitary conditions of the battle areas. Compared with the experiences of some English Sisters and Red Cross volunteers, our experiences have been quiet, but not less interesting and satisfying. They say we have much better nursing experience than those nearer the front. In fact, the best and longest experienced nurses are posted for duty in the hospitals, not in the dressing and relief stations, where there is plenty of trained male assistance, unless during the period following fierce fighting and losses, as around Neuve Chapelle, Le Bassee, Hill 60, and the recent "Break of Calais." As I said before, very quickly are we connected with the battle front. The telephone rings: "Prepare to receive a train-load of wounded, one-third bad stretcher cases." Each one, both of day and night staff, is called to his or her post. The large hall is cleared, the surgical staff takes position there to admit, records the number of extra cots that may be crowded in, and also makes note of floor space for stretchers to be placed, if necessary. Usually patients are admitted at night. The night Sisters on each floor or row of tents hurry from room to room or tent to tent making themselves acquainted with the location of vacant beds and the patients admitted while they were off duty, do P.R.N. dressings, and carry out whatever orders can be done, so as to be free to assist later. The day Sisters report for duty, put on rubber aprons, prepare dressing trays, and otherwise make ready to assist in receiving the patients by making ambulance beds, airing sheets, pyjamas and nightshirts on radiators or before fireplaces, and putting in order record books, charts and diet sheets.

While these preparations are going on in the wards the kitchen staff is also active. Gallons of cocoa and broth simmer on the large range, and when the patients are admitted is sent to the wards in large lipped pails and given out to each man immediately on admission. All the orderlies are called up, some being detailed at the station to unload and reload, others to help the night orderlies to undress and bath patients, while the other men (sanitary squad, cleaning squad, etc.) of the unit assemble at the entrance to carry up stretchers, to give an "arm" to those who walk with difficulty, or to carry on their backs the lame. The main building, when filled to capacity, has about one hundred beds on each of three floors, the total number in the tents being about the same. There are three wards on each floor named after the provinces; the rows and tents are four in two sections; the sections are called after the cities of the Dominion. At night there are three orderlies to each floor, the number being doubled during the day. In the operating room the Sisters prepare for emergencies. They give anaesthetics frequently in the absence of doctors. It is almost midnight when the first of the ambulances arrives. The others follow and the unloading and passing before the admitting officer begins. We have become accustomed to these ghost-like processions. The men of the corps are in good repute for the speed and care with which they handle the wounded and ill, though each stretcher has to be carried up two or three stairways and there are many helpless stretcher cases. The walking cases, or Class C, file silently and quietly along the corridors. These are men broken from the trenches, khaki caked with clay, ragged, dirty, worn out and silent, whose accumulated miseries none may realize, whose deeds, were they properly known, would make the world dumb with respect. These

stumble and shuffle into the warmth and light of the wards. In the patient droop of the body, the dull retrospective eyes and restrained speech one catches glimpses of the weeks of preceding horrors, the countless nights of slow agony passed in the sudden parting of comrade from comrade, in the shrieking noise and delirium of blood only a few hours ago. A long line of stretchers fill the hallways next, and even here it is an exception to hear a moan or complaint, though this is a convoy of the most seriously wounded we have yet received. Bodies are literally shattered. The journey down must have been terrible, even in the comfort of the wonderfully equipped ambulance train. We are told that some dead have been removed at each station. Already within a few hours gas gangrene has developed and in thirty-six hours are very far advanced. These are the cases especially allotted to me. We heard that every one of the 5,000 beds at the base has its occupant and that 1,000 wounded have been passing on to the south all day.

"How many hours before you were picked up?" asks a sister of one.

"Twenty-six, Sister, but I dug my head into a refuge, for it was raining lead like hail and I was only hit once again, thank God."

Some of the patients fell instantly into a deep sleep to rouse only once to say: "This must be heaven." Another apologizes: "I can't sleep, the bed is sort of queer, have not been in one for eight months. But it's good to get one's clothes off. It is over a month since they have been changed." "Did you get your bath?" "I should think I did, have not had once since August."

All important dressings are cut down and replaced after each man has had a tub or sponge bath. Those suffering very much are made as comfortable as circumstances permit. Then the day Sisters are dismissed. A special diet list is made and sent to the quartermaster for the day's rations. Medical cases with high temperatures are put on plain milk, others on milk diets, and those with small wounds, ordinary, which corresponds to full in most civic hospitals. A staff surgeon makes his rounds, visiting the serious cases first, the Sister having already enquired into the nature of wounds. Clothing and effects are collected and put in piles in the corridor. For various reasons, the sooner it leaves for the sterilizer the better. Valuables are collected by the registrar's department. Patients returning to England wear the old clothes, those to the base are re-fitted with new.

About three a.m. one has time to walk from bed to bed and inspect the new patients. There is a child of seventeen (officially 20) moaning softly, with shattered arm, blue eyes and pink cheeks, looking almost infantile. There lies an old soldier swathed in bandages, a cigarette alight, declaring cheerily: "It's a bit sore, but it will be all right soon sure." Further on a round-faced dark curly-haired boy of twenty-two, with a shattered right arm and a painful right stump, a badly shattered and gangrenous leg, having been amputated just after admission, lies in restless slumber, experiencing in dreams the horrors once again. "Touch and hold me, Sister, I fear to sleep. I may go 'nutty' like him."

In one bed there is a lad picked up on the field. He was without a coat, his identification disc gone. No name or number found about. British he must be. A brain injury makes it a question whether he will ever be included in any list but the missing. Over in the corner is a quiet form, for whom a letter home and a summons for the Chaplain are the only services we can render. There is one from our own Canada, a homestead near a Saskatchewan town is his home. Many hours he lay on the field, numerous wounds of the thighs, now suffering from malignant aedema, gas gangrene. The surgeon nods, the Sisters prepare for immediate operation in the ward; there is a chance. One of the assisting Sisters goes on special duty. The good Chaplain, a Manitoban, inquires of the dear ones at home and writes at once. We know not what morning may bring. As a rule these sufferers are silent, but here and there writhing forms and smothered groans tell of agony we are helpless to relieve. Some have limbs reduced to pulp, others have lost an eye, and a few unconscious cases claim close attention. Lifting a sheet, perhaps

one discovers a haemorrhage or reveals a gaping cavity where shrapnel has torn away a joint.

A German prisoner looks up malevolently from his cot and receives inquiries with a bland stare, though in an unguarded moment he shows he has profited by his time in England, as a waiter or otherwise.

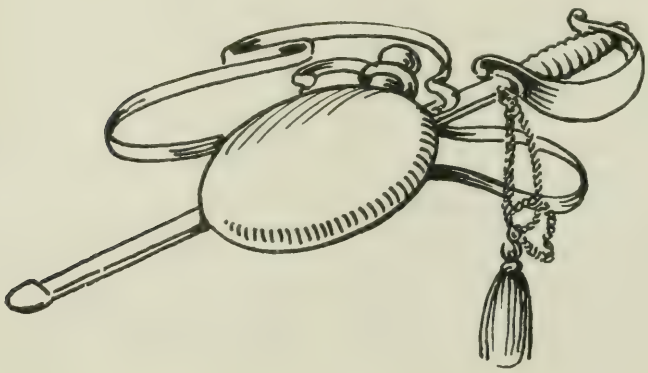
An electric light flashed on will make half a dozen patients look up hastily for a flare or the bursting of a shell, and as one passes along a voice says: "It's awful quiet here, but I seem to hear the guns yet. There were five hundred of them speaking at once, you know, Tuesday morning, and it was hell."

Just when the new arrivals are finally settled a long list is sent to each ward of those to be transferred to another hospital farther south, owing to the policy of constant evacuation to keep vacant beds close to the front. Many of those to go have been in only a few days and will be stretcher cases again. This necessitates re-dressing those wounds, which may not receive attention for the next twelve hours, practically putting every article on the helpless patients. Sometimes there may be over twenty dressings to be done in each ward and only one hour to do this in.

The orderlies awaken the patients knows as Class "C," walking cases, and take them down to the pack stores to put on their old mud-crusted uniforms. (If they are returning for duty to the base they are dressed with a complete new outfit.) The bed patients' clothing is carried up to them, and the orderlies need the capacity of many hands and feet to accomplish the duty alone. Breakfast also has to be served; convalescents assist with this. This transferring of patients is a much worse business than admitting them. Each man is given a slip with name, rank, number, regiment and diagnosis designated on it, to give to admitting officer at the next hospital.

In ten days nearly two thousand passed in and out, over eleven hundred in three days. The Nursing Sisters do practically all the dressings. Many operations are done in the wards.

We are seldom as busy as this on two successive nights, as there are periods in between when the wards are almost empty. Once there were stretchers in the corridors for several days, the patients exceeding the number of beds by forty or more. We are always glad to send men to England, particularly when their wounds require the long furlough they so thoroughly deserve. Willing as they are to return to the "frightfulness" of the trenches if their King needs them, still they know they have fully done their "bit," and the prospect of even a week in "Blighty" (the Indian word for home) will bring a pathetic smile to the most drawn face.



The Sanitary Inspectors' Association of Western Canada

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DISPOSAL OF REFUSE

Read before the Winnipeg members by J. McHARDY, Assoc. Royal San. Inst. Sanitary Inspector, Winnipeg Health Department

THE disposal of refuse in a sanitary manner, and at reasonable cost is one of the most important municipal problems. While always of a serious nature, the problem is especially so in thickly settled communities. The conditions existing in various municipalities are so variable that the methods for the disposal of solid wastes must be taken up and studied each locality by itself.

Any results obtained from other places will not always be satisfactory, as statistics gathered from one city may not be applicable to another. In order to arrive at a satisfactory conclusion, it is necessary to study the conditions pertaining to the particular locality under consideration, and apply the general principles thereto, with such modifications as may be desirable.

The condition to be met are found to vary with the temperature, industries, character of the population, and the geographical location of the municipality.

In large communities which have installed one or other of the more modern methods of refuse disposal, the material is classified so that the final disposal of each may be made more sanitary, expedient and economical. The classification varies according to the methods of disposal, and in small communities, which have no method of disposal other than the common nuisance ground, no separation is required. The general classification is:—

First, ashes, which include steam and household ashes; second, rubbish, including metal, bottles, broken glass, crockery, etc.; third, garbage, which is made up of animal and vegetable matter, such as meat, bones, fruit, etc.

Ashes can be disposed of in numerous ways according to the quality of the ash and the requirements of the district. Steam ashes may be used in making roads, lanes, etc. They can also be used for mortar mixing and brick-making. Soft ashes from the combustion of wood are of little use for this purpose, but may be used for filling in waste land, and a city which has in its near vicinity any low lying or marshy land can use these ashes to advantage.

The disposal of rubbish of an incombustible nature is a difficult problem, especially if any remuneration is expected. There are, however, certain districts where a ready market can be found for certain of these wastes. The metal and tin cans, if separated from the other wastes, may be moulded into sash weights or any other article where weight only is required. Tin cans may also be used for road-making, and if proper use be made of the steam roller, good results may be obtained.

Garbage is one of the most important of the solid wastes which the officials of a municipality have to deal with, as to its final disposal. Numerous methods are in operation, some of which are primitive in the extreme, and from a sanitary standpoint leave much to be desired. The most common methods are:—1. Dumping on land; 2. Dumping in water (applicable to sea coast cities only); 3 Plowing into soil; 4. Reduction; 5. Incineration.

Of all these methods the most popular is dumping on land. These dumps or nuisance grounds are quite common in all small communities. In these days of speculative enterprise it is no uncommon

thing to find that land which has been used as a public dumping ground for years has been subjected to a slight surface treatment and afterwards sold as eligible building sites. The system must be condemned upon sanitary grounds, especially in or near a populated district.

It might be interesting to note how long it takes different classes of refuse to decay. From experiments conducted in England animal and vegetable matter was found to become innocuous in three years. This process is brought about by oxidation. Rags and woollen materials take rather longer time, and fæcal matter in trenches three feet deep, in a soil of sandy loam, disappears entirely in three or four years.

The reduction process has been mostly developed in the United States during the past 25 years, with more or less success.

It is a process however which can only be instituted in large cities, as small communities do not produce sufficient garbage to make it pay. The heavy cost of installing the plant is prohibitive.

There are some 15 or 20 cities in the United States where these Reduction plants are in operation, although a number of others have been erected and abandoned from some cause or another. This method is only applicable to garbage freed from the admixture of rubbish. The separation system of collection must be used, and other methods have to be provided for the disposal of the remainder of the refuse. Reduction is accomplished by the action of heat or the use of solvents.

The solvent systems use naptha, benzine, carbon bisulphide, etc., which dissolve the grease separated from the tankage by pressure. In a properly constructed plant all disease germs are destroyed, and the putrescible matter rendered innocuous.

The best known systems are the "Arnold," using live steam for melting and cooking; the "Merz" and the "Simonin," using naptha and benzine.

The Arnold process is the simplest and apparently the most successful and least costly. The garbage, after metal, glass and other undesirable rubbish has been picked out, is dumped into large steel digestors, each holding about eight tons. In them the garbage is cooked for several hours under pressure of live steam. It is then allowed to fall through a valve at the bottom into a continuously revolving press, which separates the fluid from the tankage. The fluid consists of grease and water, which is caught in floor drains and run off to settling basins where the oil and grease is subsequently separated by gravity, and clarified by exposure to light. The water is allowed to flow off into the sewer, and the remaining solid matter or tankage is dried and sold as fertilizer, or burned as fuel at the works.

The Merz system is briefly described as follows: The garbage is dumped into a hopper from which the superfluous water drains off. It is then spread out and as much foreign matter as possible, such as cans, bottles, rags, etc., picked out. Then it is dumped into hot air driers and stirred by mechanical mixers for about six hours, when it becomes of a dark brown and greasy consistency. In this condition it is put into extractors, or closed tanks, into which naptha is made to percolate for the purpose of dissolving and thereby extracting the grease. The grease solution is drawn off, separated from the naptha, barrelled and sold. The naptha is vaporized, condensed and used again. The tankage is ground and sold for fertilizing purposes or for fuel.

The Simonin process is quite similar. While naptha is used for the grease extraction it is applied directly, obviating the necessity of prior drying. The garbage is dumped into pans on cars which are then run into the extractors. These are subsequently closed tightly and naptha allowed to fill them. The garbage and naptha are then heated by steam coils placed in the bottom. The grease is dissolved by a portion of the naptha and the heat evaporates the remaining naptha and water. The latter pass off as a vapor into a condenser to be liquified and then flow into a separator, from which the water flows into the sewer and the naptha into a tank. From this tank it is drawn for repeated use. This evaporation is continued until all the naptha is driven off and a solution of grease remains at the bottom of the extractor. It is then drawn off and forced into a settling tank, from whence it flows into a still where the re-

maining naptha is removed by steam heat and finally is drawn off into a tank, from which it is barrelled for shipment. The tankage is disposed of in the same manner as in the preceding system.

This system, although having a decided advantage over the Nuisance Ground, cannot be recommended from a sanitary point of view, as the garbage, having to pass through several operations, is likely to create a nuisance.

The process of incineration has been developed principally in Europe. Successful destruction by fire may be said to date from the incinerator plant designed and erected by the late Alfred Fryer, of Nottingham, England, in the year 1875.

Vast improvements have been made in the designing and constructing of these plants in recent years and the apparatus in use to-day are like most of the other useful inventions, the result of much experiment and very expensive failures.

Ordinary type furnaces there are in hundreds, built mostly by ordinary contractors. As a rule they are unscientifically constructed and not properly designed or adapted for the efficient destruction of refuse. In many of these furnaces it has been found absolutely necessary to use large quantities of coal in order to obtain complete combustion of the refuse.

Some of the defects in these furnaces are: Insufficient area in the flues; low temperatures in the cells; cast iron brought in contact with high temperatures, causing speedy destruction of the fittings; too many angles in the flues; emission of noxious vapors, smoke, dust and partly consumed refuse.

Numerous complaints and objections have been raised against incineration, and when viewed from the experiences of some individual plants rather than the broad principle, these may have been well founded. The method, however, from a sanitary standpoint has an attractive feature as the necessary heat generated to ensure the complete combustion of the refuse will positively destroy all germ life.

In Europe, more particularly in England, incinerator plants when well constructed have worked satisfactorily, even when placed in populous districts.

Returns may be had from the process by utilizing the heat for power purposes, and as this is a valuable asset the plant may be made self-supporting in favorable instances. The clinker may be used for mortar-mixing or brick-making and if additional revenue is sought, the marketable matter may be sorted out and sold before it passes to the furnace.

As to the particular class of destructor that would be suitable for any municipality, much depends on local conditions, but most of the up-to-date destructors, with slight modifications, will be found suitable in any part of the world. While I do not intend to recommend any particular type of incinerator, I will endeavor to describe one for illustrative purposes.

One of the most modern destructors is that of Messrs. Beaman and Dea. This destructor at the present time is commanding a large share of attention throughout the United Kingdom, and many large installations have taken place within the last few years.

The refuse to be burned is hauled up a short incline (about 8 or 9 feet above the ground level), and is tipped into an enclosed hopper having an opening about two feet square. This can be closed with swing doors, so that the refuse is out of sight.

From the hopper it passes down to a fire brick hearth having an inclination towards the furnace of about 50 degrees. At the bottom of the hearth the refuse is out of sight.

From the hopper it passes down to a fire brick hearth having an inclination towards the furnace of about 50 degrees. At the bottom of the hearth the refuse is received upon the fire-grate, which is five feet square. The grate is about 2 ft. 9 inches above the floor of the ash pit. The grate bars are of the fixed type with a space between them of a quarter of an inch. The weight of fine ash passing through these openings in a week is about 500 lbs.

Vertically under the bridges, between the furnace and the combustion chamber, is an air culvert, on the top of which are the air blast pipes, about twelve inches in diameter, and which discharge air into a hermetically closed ashpit immediately under the fire base. The air is supplied

by fans, and is easily controlled by the stoker. The forced draught helps to keep the bars cool and the wear and tear of these are very slight.

The fumes from the drying refuse on the hearth pass over the fire and over the fire bridges. The bridge is perforated longitudinally with air passages, these perforations connecting with a miniature flue leading from a grate opening on the face of the brick-work outside. This creates a strong draught, and the air in the course of its passage becomes heated. It is then discharged near the top of the bridge and meets the fumes passing over the combustion chamber. This ensures their complete combustion by means of the auxiliary supply of heated oxygen. The principle is somewhat similar to that of the Bunsen burner or the ordinary gas stove. The combustion chamber is provided with large doors for the admission of infected bedding, carcases of animals, and the periodical removal of fine dust.

This type of furnace is a good steam producer. A boiler may be advantageously fixed in connection with each pair of cells, and the power used for any purpose for which it may be required, such as driving the fans for providing the forced draught. The capacity of this destructor per cell of ordinary household refuse is about one ton per hour. It is also capable of destroying efficiently slaughter-house offal, decayed vegetables or fruit, and pressed sewage sludge.

During a twenty-four hour test of one of these destructors cast iron was melted at intervals, showing a temperature of not less than 2,100 deg. Fht.

The sanitary disposal of city wastes is and should be treated as an engineering problem, and a method carried out along proper engineering lines need not be productive of more smell or the cause of greater nuisance than other things that are tolerated in our daily lives.

In certain districts of Western Canada there are two items which are classified as refuse and treated as such, which could be disposed of in such a manner as to be of good commercial value, namely, manure and dead animals. It must be admitted that manure is the natural inheritance of the soil, and I believe the time is not far distant when the agricultural community will realize that the soil will not continue to yield abundant crops year after year without stimulation. It may be interesting to note that certain movements pointing in this direction are already on foot.

The disposal of dead animals by cremation is from a sanitary standpoint to be commended. On the other hand, it is a serious waste of the basis of certain valuable commercial products. A large quantity of material used daily by the public is manufactured from the carcases of animals, a few of which are leather, from the hide; hair, from the tail and mane of the horse; glue, from the hoofs; wagon grease, from the rendered flesh and fat; artificial manure, from the bones. Under the present system of disposal all these products, (except the hide), go to waste, and the party who is unfortunate enough to lose a horse not only loses the value of the animal, but has to pay a nominal sum for its destruction.

I think if authority were granted to erect plants for the rendering of carcases and the plans for same drawn up by a thoroughly qualified sanitary engineer, that no nuisance need exist.

MONTHLY JOTTINGS

We have been privileged to see several very interesting letters from members of the Association who are at the front, notably one from Nurse Attril, of Winnipeg.

* * *

Not all of these members are engaged in hospital or sanitary work—some are in the trenches. Those, however, who are with the Medical Corps or specially detailed for work along sanitary lines should add immensely to their knowledge of such matters and come back to Canada with experience which should render them much more efficient as sanitary officers.

The Provincial Board of Health of Manitoba is being re-organized and made more efficient. Present indications are that the new Board intends to take a more active part in preventive medicine than has been the case heretofore. The principal lines of action foreshadowed are child welfare work in the rural districts, and more active work in the campaign against tuberculosis.

* * *

This Association has represented to the above Board that good results can be obtained if a few qualified sanitary inspectors were employed by them. These men might be used to advantage in improving conditions in rural districts. We are afraid, however, that only medical men will be employed and these on the basis of honorary provincial district health officers. If this plan is adhered to we fear that not much will be obtained in the way of practical results.

Just now the particular fad in health work is child welfare and it cannot be denied that this field of work shows more immediate practical returns for the money and labor invested. This can be shown beyond all doubt by the vital statistics of many cities. Many thousands of babies who would otherwise have died have been saved from death within the first year of their existence.

* * *

We prophesy, however, that after this work has proceeded along certain lines for some time and the infantile mortality rate has been reduced that the next logical step will be taken, viz: the handling of the housing question in a thorough and scientific manner. It is useless to save the infants if they are afterwards to die before adolescence, or to attain manhood or womanhood in a stunted physical condition.